Kayakers at Mason Neck State Park
Photo Credit: Park Rx America

Northern Virginia Regional Commission
Coastal Resources
Technical Assistance Program

October 1, 2019 – March 31, 2021
NOAA Grant # NA19NOS4190163
Fiscal Year 2019, Task 46

Northern Virginia Regional Commission
www.novaregion.org

The Voice of Northern Virginia

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In Grant Year 2019 (October 1, 2019 – September 30, 2020), the Northern Virginia Coastal Resources Technical Assistance Program was funded in part by the Virginia Coastal Zone Management Program at the Department of Environmental Quality, through Grant NA18NOS4190163 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

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Appendices

Executive Summary

This report was produced, in part, through financial assistance from the Virginia Coastal Zone Management Program (CZMP), Virginia Department of Environmental Quality through Grant No. NA19NOS4190163 from the National Oceanic and Atmospheric Administration (NOAA). This report describes the technical assistance program conducted by the Northern Virginia Regional Commission (NVRC) through its Coastal Resources Management Program. The Coastal Resources Program at NVRC includes; coordination of regional programs that advance Virginia CZMP's interests in coastal resource management, public outreach, education and training, environmental impact and permit reviews, and technical assistance on coastal issues relevant to Northern Virginia localities.

This report fulfills the product requirements set forth in the FY 2019 Virginia Coastal Zone Management Program Grant, Task 46 (NOAA Grant # NA19NOS4190163) for:

- Product #1 – Annual Report – NOVA Coastal Resources Technical Assistance Program (55 %)
- Product #2 – Special Project Summary of Regional Stormwater Education Campaign (40%)
- Product #3 - Benefits accrued from prior CZM grants (5%)

1 Introduction

The Northern Virginia Regional Commission's (NVRC) Regional Coastal Resources Program has been fostering an effective partnership among federal, state, and local governments in the region for over twenty years. Through its partnership with the Virginia Coastal Zone Management Program (CZM), NVRC has been conducting research on ongoing and new or emerging coastal issues affecting the region and providing technical and planning assistance to Northern Virginia localities on these issues since 1992.

CZM awarded the NVRC a technical assistance grant of $34,500 on October 1, 2019 to continue its Regional Coastal Resources Management Program through September 30, 2020. Due to the disruptions caused by the COVID-19 pandemic and associated lockdowns, NVRC requested and CZM granted a six-month extension to this grant in order to successfully complete the tasks. The general objectives of the Coastal Program in Northern Virginia include; promote the sustainable use of coastal resources, provide technical assistance to local governments and non-governmental organizations on emerging issues facing the coast such as marine debris, water quality and coastal hazard planning; improve local capacity to protect, manage and restore coastal ecosystems; improve public access to the coast; and serve as a forum for information exchange, training, and coordination of planning among stakeholders in the region. This report documents the outcomes of the Technical Assistance grant in FY19.

2 Product Number One: Outcomes of Northern Virginia's Coastal Resources Technical Assistance Program

The Technical Assistance grant from CZM allows NVRC's Coastal Resources Management Program to conduct public outreach and education on coastal issues, coordinate regional programs that advance CZM's interests in coastal resource management and serve as a point of technical information exchange for local planning involving coastal issues. The Technical Assistance grant also allows NVRC to support CZM through serving as a member of the VA Coastal Policy Team, participation in the quarterly Coastal PDC meetings, semi-annual Coastal Policy Team meetings, Coastal Partners Workshop, Potomac Watershed Roundtable, and other regional initiatives that involve coastal issues. These meetings help to identify appropriate special projects and technical studies that would benefit the region as well as ensuring that local efforts may take advantage of or leverage other related initiatives taking place throughout the coastal zone of Virginia.

During the grant period, NVRC staff coordinated with partners to implement one rain garden workshop to educate property owners, master gardeners, master naturalists, and landscape professionals on ways they can help to manage stormwater and runoff on their property.

The Rain Garden workshop *"Beautifying you Yard for Healthy Streams*" was initially planned as an in-person event to take place in March 2020. Due to the COVID-19 pandemic closures, the event was held on-line as a webinar January 29, 2021. During the live webinar, 190 participants learned how to create, install, and maintain a rain garden on their property. Local residents, master gardeners, master naturalists, landscape designers, and other interested parties attended the webinar. The webinar was recorded and posted online on the NVRC YouTube channel where it has since been viewed an additional 332 times (https://www.youtube.com/watch?v=_o6gkYLDjnI).

Other outcomes of the FY19 grant included participation in working groups and teams to coordinate and exchange ideas on topics that are relevant to the coastal zone. These meetings included:

Coastal Planning District Commissions Planning Meetings

- Oct. 8, 2019 George Washington Regional Commission, Fredericksburg, VA
  Outcome: strategic discussion of how PDC's can contribute to the development of the Virginia Coastal Resilience Master Plan and prioritization of needs for the 2021-2025 CZM Section 309 Strategy.

- June 9, 2020, Virtual- hosted by Northern Neck Regional PDC
  Outcome: further discussion of the role the PDC's focal area grant will play in development of the Virginia Coastal Resilience Master Plan and communication regarding the Section 309 Strategy.

- Dec 18, 2020, Virtual- hosted by Northern Virginia Regional Commission
  Outcome: strategic discussion on how to align the PDC resilience focal area grant and the Virginia Coastal Resilience Master Plan and preview of NVRC Climate Resilience Dashboard (https://experience.arcgis.com/experience/d8319e3a2b5c42efa9dd241ddc0a0932/page/page_1/).

Virginia Coastal Policy Team Meetings

- January 15, 2020, DEQ Headquarters, Richmond, VA
  Outcome: voted on FY20 focal area projects and also on rankings (high, medium, or low) for the nine Section 309 topics included in the Coastal Needs Assessment and Strategy for FY2021 - 2025 (Aquaculture, Ocean Resources, Marine Debris, Wetlands, Cumulative & Secondary Impacts of Growth & Development, Coastal Hazards, Public Access, SAMPs, and Energy & Government Facility Siting)

- September 23, 2020- Virtual, hosted by DEQ
  Outcomes: communication regarding the FY20 focal area projects and review of topics for Section 309 identified in the Coastal Needs Assessment and Strategy for FY2021 - 2025

Trainings

1) "Section 309 Coastal Needs Assessment and Strategy for FY2021 – 2025" - January 30, 2020, 18 participants, A) Government Coordination

2) "How Access to Parks Can Improve Public Health and Wellbeing" - August 25, 2020, 29 participants, Issue B) Public Access

3) "NVRC Climate Resilience Dashboard" – December 7, 2020, Approximately 35 participants, D) Coastal Hazards

4) "NVRC Climate Resilience Dashboard" - Dec 18, 2020, 18 Participants, D) Coastal Hazards

5) "Beautifying Your Yard for Healthy Streams" - January 29, 2021, 190 Participants, Issue E) Coastal Dependent Uses and Community Development/Coastal Water Quality

Technical Assistance

- Northern Virginia Salt Management Strategy - October 28, 2019: SaMS Survey Discussion
  Outcome: Gained agreement for use of survey instrument by the stakeholders

- CSI Section 309 Strategy Development Workgroup - February 24, 2020.
  Outcome: the group assisted CZM staff in identifying needs that could be met by pursuing a CSI strategy. At a later date, CZM staff determined that the majority of these issues could be addressed under a Coastal Hazards Strategy.

- Fairfax County Tree Action Plan Stakeholder Advisory - March 16, 2020
  Outcome: contributed technical assistance for development of the Fairfax County Tree Action Plan

- Salt Management Strategy (SaMS) Stakeholder Advisory Committee (SAC) Meeting - December 2, 2020

Outcome: reviewed feedback on the draft SaMS Toolkit, voted to approve the draft SaMS Toolkit, addressed plans for the public debut of the SaMS Toolkit, and discussed SaMS Implementation planning. To access the materials used or referenced during this meeting, visit https://www.deq.virginia.gov/SaMS/MeetingMaterials.aspx

- MARISA Stakeholder Meeting December 4, 2020,
  Outcome: identified emerging challenges for which the Mid-Atlantic Regional Integrated Sciences and Assessments (MARISA) program would be well-positioned to work with partners in the region to tackle.

NVRC also continues to participate in the EA/EIS and permit intergovernmental review process. Over the fiscal year, NVRC responded to 4 EA/EIR requests throughout the region as part of the intergovernmental review process.

2) Product Number Two: Special Project Report - Northern Virginia Clean Water Partners Regional Stormwater Education Campaign

Polluted stormwater runoff is the number one cause of poor water quality in streams and rivers in Northern Virginia. To reduce the impacts of stormwater pollution, the Northern Virginia Clean Water Partners (CWP) program aims to educate the public about the impact of stormwater runoff on water quality and change human behaviors in our cities and neighborhoods through Regional Stormwater Education Campaign.

The CWP is comprised of a multi-disciplined group of local governments, drinking water and sanitation authorities, and individual businesses working together to address the common issues surrounding pollution prevention, stormwater management, and source water protection. "Only Rain Down the Storm Drain" is the motto of CWP.

The Regional Stormwater Education Campaign was initiated in 2003 to assist localities in leveraging funds to achieve common goals regarding stormwater education and outreach and promote consistent messages. NVRC held several meetings with the Partners to discuss and determine the high priority water quality issues for the region. Regional water quality impairments were the primary criteria used to determine the issues. The high priority water quality issues identified by the Partners were bacteria, nutrients, salt, litter, and motor oil/chemical contaminants. These issues became the focus of the education and outreach campaign for 2019-2020. The 2019-2020 outreach campaign helped to satisfy MS4 (Municipal Separate Storm Sewer System) Phase I and Phase II permit requirements for stormwater education and documenting changes in behavior.

Sixteen local jurisdiction members contributed financial and in-kind resources to the program in FY2019, for a total budget of $109,000. The Partners met twice during the grant period to foster dialogue among the partners as well as to plan and implement campaign activities.

In FY2019, educational ads featuring messages on the importance of proper pet waste disposal, over fertilization of lawns and gardens, and proper disposal of motor oil were distributed to the public via social media, television, print, internet advertising and the Only Rain Down the Storm Drain website. In addition to the educational advertisements, public outreach events hosted throughout the Northern Virginia region also raised awareness and encouraged positive behavior change in residents. The educational ads featured the well-known national symbol of non-point source pollution; the rubber ducky.

From July 2019 through June 2020, the advertisements aired on 20 English language cable TV networks, and five Spanish language networks a total of 7,175 times. The networks were selected based upon research that shows they have the highest 'reach' to the target audiences.

These TV ads delivered 22,242,313 household impressions. The campaign also featured banner ads on the Xfinity.com website that promote the same messages as the cable TV ads. In addition to cable network advertising, digital ads on Premium Digital Video websites that promote the same messages as the cable TV ads resulted in 544,812 impressions.

As a new strategy in 2020, the Partners contracted with a digital communications firm to develop and implement a social media campaign on Facebook and Twitter. The results so far have shown that these platforms are an effective way to engage with the target audiences.

- Since May 1, 2020 the Facebook page has gathered 46 page likes, 52 follows, and reached 99,095 people.
- During this time there were 49 posts, 17,943 post engagements, and 14 posts clicks
- Since the creation of the Twitter page on May 13, the page has gained: 18,960 impressions, 319 total engagements, 28 post link clicks, and 27 followers.
- We have tweeted 88 times leading to: 56 retweets and 64 likes.
- Two paid Facebook advertising campaigns were conducted from 07/06– 07/30 resulting in 15,879 clicks through to the website.

The Northern Virginia Clean Water Partners website www.onlyrain.org was updated with new information and SEO capabilities. The site received 7,220 unique visits during the year. These activities helped to fulfill the outreach and education requirements of the jurisdictions' MS4 permits including requirement for each permittee to identify three high priority issues, determine the target audience for each high priority issue, and reach 20% of the target audience for each high priority issue. In total, 75% of the target audience for each issue was reached.

An online survey of 500 Northern Virginia residents was conducted by a market research firm to determine the effectiveness of the ads, reveal any changes in behavior, and aid in directing the future efforts of the campaign. Nearly a quarter (22%) of respondents recalled seeing the ad on TV, Facebook, or Twitter after watching the video clip in the survey which is a seven percent increase from 2019. This indicates that adding social media to the campaign had a positive impact on the recall rate. Responses to the survey suggest that public support remains strong for local government programs that improve the quality of water in local and regional streams and rivers and the Chesapeake Bay however the transient demographics of the Northern Virginia region indicate that there continues to be a need to educate residents about stormwater pollution and how they can reduce their impact. Complete survey results are included as Appendix B.

NVRC staff prepared a summary of the results from the Only Rain campaign and distributed it to the Partners in September 2020. This report is included as Appendix A.

3) Product Number Three: Benefits Accrued from Prior CZM Grants

The Technical Assistance grant from CZM has served as a foundation for the CWP project.

To reduce the impacts of stormwater pollution, the CWP aims to change human behaviors in our cities and neighborhoods through a public awareness and education campaign. The partnership is comprised of a multi-disciplinary group of local governments, drinking water and sanitation authorities, and individual businesses working together to address the common issues surrounding pollution prevention, stormwater management, and source water protection. By participating in the program, local jurisdictions have an unprecedented opportunity to pool local outreach dollars to collectively target pollution-causing behaviors for greater impact at less cost and effort. In addition to multi-media outreach, the strategy provides for community engagement and the production of educational materials that can be customized and used by each locality again and again. The primary goal of the partnership is to bring awareness of the impact stormwater has on waterbodies in Northern Virginia and to reduce stormwater-related pollution from entering local waterways. To meet this goal, the Partners work together to:

- Educate the region's residents on simple ways to reduce pollution around their homes;
- Monitor changes in behavior through surveys and other data collection techniques; and
- Pilot new cost-effective opportunities for public outreach and education.

Members include stormwater program managers, Municipal Separate Storm Sewer System (MS4) Permit managers, communication directors, public information officers, water quality compliance specialists, and environmental planners. Membership is voluntary. However, the

partnership provides a cost-effective means to meet mandatory state and federal stormwater requirements. By working together the partners are able to leverage their available funds to develop and place bi-lingual products with common messages and themes, thereby extending their individual reach.

The Annual Regional Stormwater Education Campaign was initiated in 2003 to assist localities in leveraging funds to achieve common goals regarding stormwater education and outreach and promote consistent messages for fertilizer and pesticide use, pet waste disposal, and motor oil recycling.

The 2019-20 campaign built on prior efforts and was able to leverage matching dollars.
For more information visit www.onlyrain.org

Funds Leveraged since 2007: $1,282,225

Appendix A

Northern Virginia Clean Water Partners Summary of Regional Stormwater Education Campaign

Northern Virginia Clean Water Partners Annual Summary of Results July 1, 2019 – June 30, 2020

www.onlyrain.org

Polluted stormwater runoff is the number one cause of poor water quality in streams and rivers in Northern Virginia. When it rains, the water runs off streets, driveways, yards and parking lots and mixes with pesticides, grass clippings, fertilizer, bacteria, and oil. All this pollution enters the storm drains on the street and is discharged directly to a stream. The runoff is not filtered or sent to a wastewater treatment facility.

To reduce the impacts of stormwater pollution, the Northern Virginia Clean Water Partners came together to change peoples' behavior through a public education campaign.

- **About the Partnership**

The Northern Virginia Clean Water Partners is composed of a group of local governments, drinking water and sanitation authorities, and businesses that share the common goals to keep Northern Virginia residents healthy and safe by reducing the amount of pollution from stormwater runoff that reaches local creeks and rivers, and empower individuals to take action to reduce pollution.

To meet these goals, the Partners work together to:

- Identify high priority water quality issues for the region;
- Identify the target audience(s) for outreach;
- Educate the region's residents on simple ways to reduce pollution around their homes;
- Monitor changes in behavior through surveys and other data collection techniques; and
- Pilot new cost-effective opportunities for public outreach and education.

Membership is voluntary and each member makes an annual contribution to fund the program. By working together, the partners can leverage their funds to develop and place bilingual educational products with common messages and themes, thereby extending the campaign's reach.

Only Rain Down the Storm Drain is the motto of the partnership.

The 2020 campaign helped to satisfy MS4 (Municipal Separate Storm Sewer System) Phase I and Phase II permit requirements for stormwater education and documenting changes in behavior.

For more information visit www.onlyrain.org

2020 Campaign Overview and Accomplishments

In 2020, the Northern Virginia Clean Water Partners selected the following three high priority water quality issues to focus on for the Campaign:

- bacteria,
- nutrients, and
- chemical contaminants.

The Partners identified the target audiences for these issues as pet owners, homeowners with a lawn or garden, and home mechanics and do-it-yourselfers.

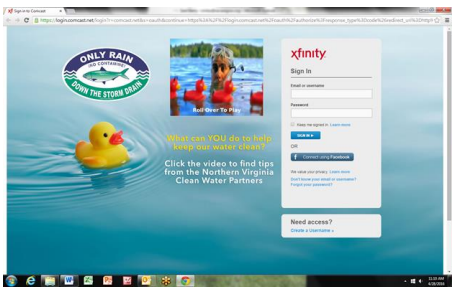
The campaign used television, print, internet advertising, Facebook, Twitter, and the Only Rain Down the Storm Drain website to distribute messages linked to specific stormwater issues, such as proper pet waste disposal, responsible fertilizer use on lawns and gardens, and proper disposal of detergents, paints, stains, and auto fluids.

In addition to the multi-media campaign, partners participated in local events to raise awareness and encourage positive behavior change in residents. The social media posts, television and internet ads featured the well-known national symbol of non-point source pollution; the rubber ducky.

2,242,313	Total household television impressions*
544,812	Total digital impressions (internet banner ads and in-stream video ads)
118,055	Total social media impressions (Facebook and Twitter)
18,262	Engagements with social media posts (Facebook and Twitter May-July 2020)
7,220	Visits to the **www.onlyrain.org** website

Throughout the campaign year, the Partners made the following efforts to educate the public and promote awareness of impacts of stormwater pollution:

- From July 2019 through June 2020, aired four Public Service Announcements on 20 English language cable TV networks, and five Spanish language networks a total of 7,175 times. The ads featured messages on the importance of picking up pet waste and general household stormwater pollution reduction measures.
- Placed digital ads on Premium Digital Video websites that promote the same messages as the cable TV ads.
- Featured two full day, full page ads for Only Rain on the sign-in pages for Xfinity.com.



As a new strategy in 2020, the Partners contracted with a digital communications firm to develop and implement a social media campaign on Facebook and Twitter. The results so far have shown that these platforms are an effective way to engage with the target audiences.

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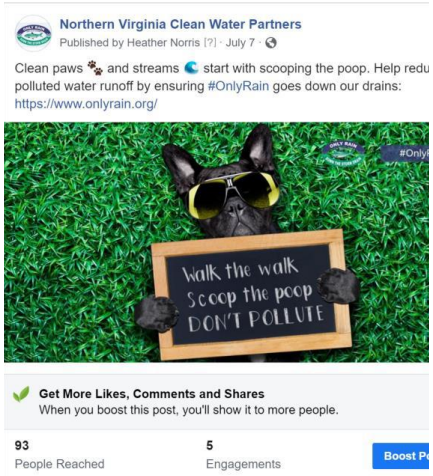

- Since the creation of the Twitter page on May 13, the page has gained: 18,960 impressions, 319 total engagements, 28 post link clicks, and 27 followers.
- We have tweeted 88 times leading to: 56 retweets and 64 likes.
- Two paid Facebook advertising campaigns were conducted from 07/06– 07/30 resulting in 15,879 clicks through to the website.
- Conducted an online survey of 500 Northern Virginia residents to determine the effectiveness of the ads, aid in directing the future efforts of the campaign, and to reveal any changes in behavior.
- Continued to update and maintain the Northern Virginia Clean Water Partners website.

Findings in the 2020 survey include:

General Awareness

- Nearly half (46%) of respondents either don't know where storm water ends up or believes that it goes to a wastewater treatment plant. This is a significant increase from 2019.
- 22% of respondents recalled seeing the ad on TV, Facebook, or Twitter after watching the video clip in the survey which is an increase from 2019. This indicates that adding social media to the campaign had a positive impact on the recall rate.
- Of those who recalled seeing the ads, 36 percent state they already take action to protect clean water, 48 percent state they now pick up their pet waste more often, 15 percent state that they now properly dispose of motor oil, and 35 percent state they plan to fertilize fewer times per year.
- When shown the Only Rain Down the Storm Drain logo, 61 percent of the respondents recognized it compared to 54 percent in 2013. This increase indicates that **awareness of the logo has increased over time.**
- Even though more than half of respondents feel at least somewhat confident that they would know where to report potential water pollution, only 48 percent would report water pollution if they saw it. This suggests **there is a need for education on what pollution may look like and to encourage residents to report it if they see something.**
- One in five respondents stated they don't know they need to take action around their home to protect clean water.
- **The majority (67%) of respondents indicated that they were aware their locality has a specific place**

to drop off household hazardous waste.

- About four in ten respondents felt they were **most prevented to take action to protect clean water because they don't know what to do.**
- The majority of respondents (71%) indicated that they had not seen or received information about reducing water pollution in the past 12 months from any source which indicates a need to continue with public outreach.

Understanding Behaviors

In addition to capturing responses to questions regarding the effectiveness of the campaign, the survey honed in on the current behaviors and attitudes of Northern Virginia residents as they relate to pet waste management, lawn care, and motor oil disposal. Responses to these questions support the development of future messages and targeted promotion.

The most important reason dog owners are motivated to pick up their pet's waste is because "It's what good neighbors do". The number of respondents choosing "It causes water pollution" as the main reason has fluctuated and was the fourth most common reason in 2020.

78% of lawn and garden owners fertilize their lawns at least once per year. **Among those who fertilize once a year, 19 percent fertilize in the spring and only six percent fertilize in the fall.** This suggests that there is room to educate residents of Northern Virginia that fertilizing in the fall is better for local waterways.

Among those who fertilize their lawn, only four percent of respondents indicated that they fertilize based on results of a soil test. Slightly more than one-third (35%) in 2020 leave their grass clippings on their lawn, while 40% bag their grass clippings for disposal.

In a new question for 2018, after reading a description of a rain barrel, rain garden, and conservation landscaping, respondents were asked if they had implemented these features at their home or had heard about them. Five percent reported having a rain barrel, while two percent reported having a rain garden, and eleven percent reported having conservation landscapes in their yard. This indicates **there is a significant opportunity to continue to promote these practices to homeowners.**

Consistent with past years, the majority of respondents take their vehicle to a service station for oil changes (73%) or take used oil to a gas station or hazmat facility for recycling (11%). **Approximately ten percent of Northern Virginians reported storing used motor oil in their garage, placing it in the trash or dumping it down the storm drain, sink or on the ground.**


NORTHERN VIRGIN
WATER QUALITY
Although the entirety of the Northern Virginia region i
Potomac River watershed, many Northern Virginians
underinformed about actions they can take to reduce
in stormwater runoff.
Where do you believe storm
59%
of NoVA residents think
up in the Potomac River
AND
Around 46% of
where it goes
wastewater tr
53%
of Northern Virginians feel at least
somewhat confident that they
would know where to
report potential water pollution.
BUT ONLY
44%
would report
water pollution if
they saw it.
Although improperly disposed pet
waste is a major source
of bacteria in stormwater,
ONLY 10%
of dog owners in Northern Virginia
believe water pollution is the most
important reason to pick up after
your pet.
37%
of car/truck owners
49%
use environmentally
friendly detergent.
40%
wash on the grass
other surface tha
absorbs water.
About 1/3 of NoVA residents are
unaware of whether their locality
has a specific place to drop off
HOUSEHOLD HAZARDOUS
WASTE
ONLY
ARE IN

Only Rain Down the Drain

www.onlyrain.org

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2020 Northern Virginia Clean Water Partners

Fairfax County | Arlington County | Loudoun County | Fairfax Water | City of Alexandria | City of Fairfax | City of Falls Church | City of Manassas Town of Leesburg | Town of Dumfries | Northern Virginia Regional Commission | George Mason University | Virginia Coastal Zone Management Program | Fairfax County Public Schools | Prince William County Public Schools | Northern Virginia Soil and Water Conservation District

Virginia Coastal Zone MANAGEMENT PROGRAM

nvrc Northern Virginia Regional Commission

Appendix B

Regional Stormwater Education Campaign Survey Results

Northern Virginia Regional Commission

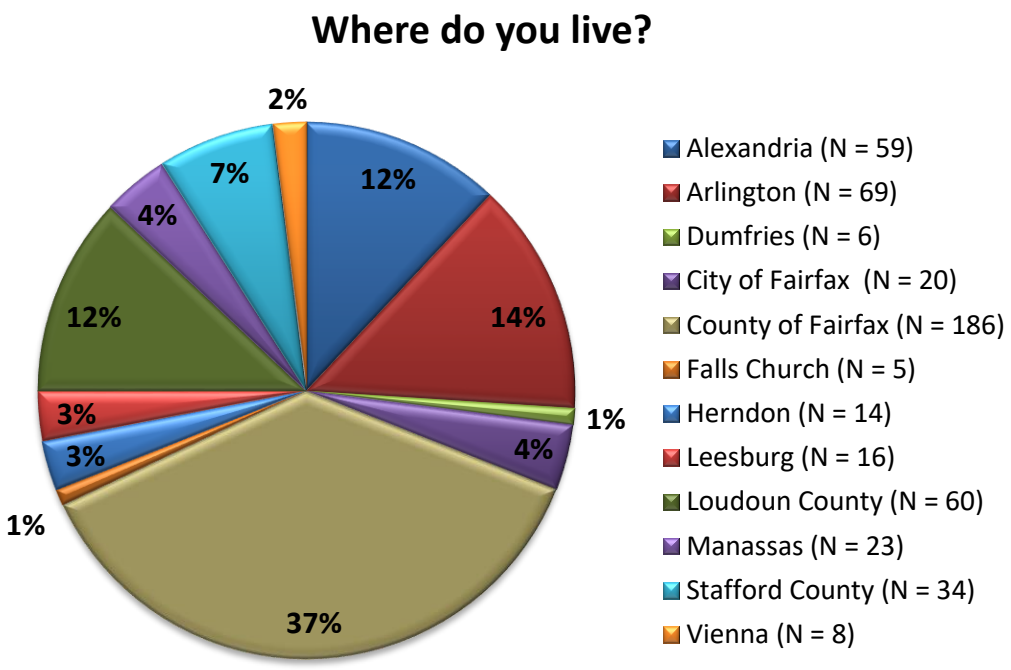
2013 Only Rain NVRC Survey

Summary Report of Findings

Study Methodology & Respondent Characteristics

The Northern Virginia Regional Commission (NVRC) hired Amplitude Research, Inc. to conduct a survey of residents of northern Virginia to measure beliefs and attitudes related to pollution of the Potomac River and Chesapeake Bay.

Amplitude Research administered the study online in July of 2020. In the end, 500 surveys were completed by web panelists who live in one of the areas of Virginia shown in the chart below. (In the legend, "N =" indicates the number of respondents in each city, county, or town.)



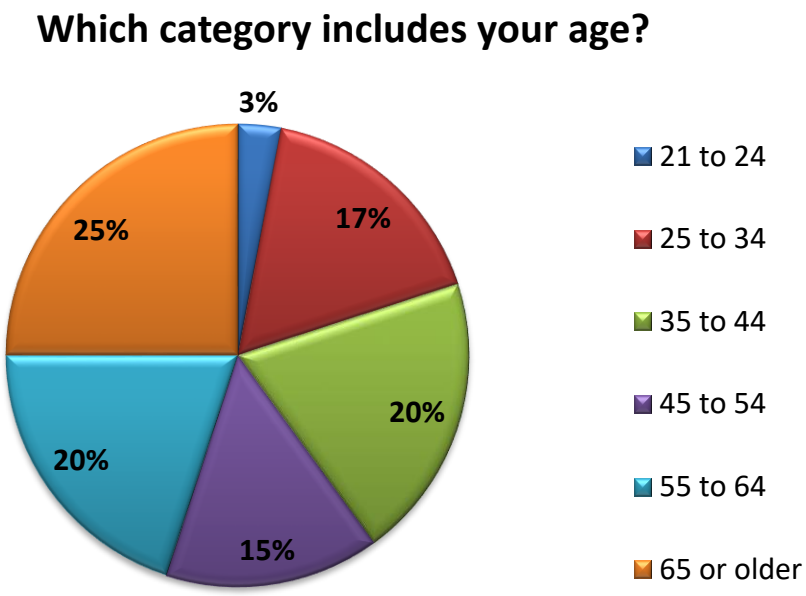
Later in this report, the results for some of the questions are "broken out" by area, in addition to presenting the results for the total sample. However, the specific areas listed above were grouped together into larger areas so that each larger area used for analysis had a reasonable number of respondents.

Residents from Leesburg and Loudoun County were combined into a single category labeled "**Leesburg / Loudoun**," since the town of Leesburg lies within Loudoun County. Another category used for analysis was "**Dumfries / Stafford**," since Dumfries lies just north of Stafford County. Although Dumfries is not located within Stafford County, it is closer to Stafford than to the other counties covered in the survey. (There were too few survey respondents living in Dumfries to examine the results for Dumfries separately.) The City of Fairfax, Falls Church, Herndon, and Vienna were combined with Fairfax County to create the category "**Fairfax Inclusive**," since these cities and towns lie within the Fairfax County area. Although the City of Fairfax and City of Falls Church are distinct areas, their location falls within the larger area

circumscribed by Fairfax County. Manassas was added as a qualifying location in the 2020 survey, and it was combined with "Fairfax Inclusive."

Alexandria and Arlington each had a sufficient number of respondents so that each of these areas can be examined separately.

The minimum age to participate in the survey was 21. As shown in the chart below, each age group was well represented in the survey. Although a small proportion were age 21 to 24, this category has fewer years than the other categories shown. For analysis purposes later in this report, the categories "21 to 24" and "25 to 34" were combined into the broader category of "21 to 34."

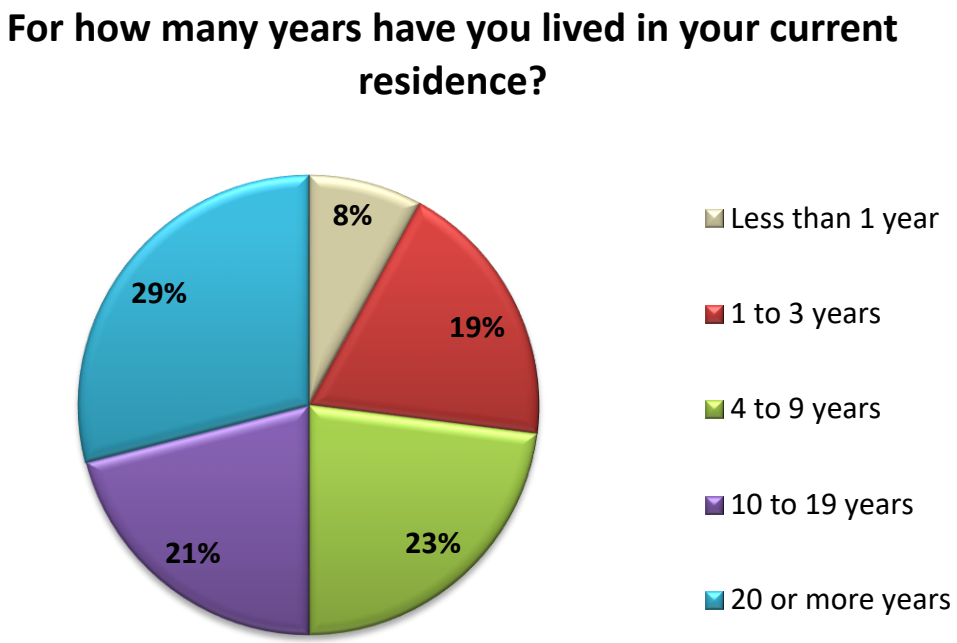


The survey respondents were split between males (51%) and females (49%), while slightly more than three-fourths (78%) indicated that they own their residence, and 22% reported renting.

The chart on the next page shows how long respondents have lived in their current residence.

A survey was conducted in each year between 2011 and 2019 that included many of the same or similar questions, targeted the same geographic area, and had a similar demographic mix as in this 2020 study. Later in this report, comparisons between years are shown where appropriate. Initially, the title used for the study was "NVRC Resident Survey." Starting in 2013, the study title was changed to "Only Rain NVRC Survey," since a new question was added about awareness of the "Only Rain" logo. A number of new questions were added to the 2018 survey and were kept in the 2019 and 2020 surveys. For this reason, many parts of this report have comparisons between just 2018, 2019, and 2020.

In 2020, a minimum quota of 8% of the total sample was set for those who are of Hispanic heritage to allow analysis of results specifically among Hispanic respondents.



Sampling Variability

While examining the survey findings, it is helpful to keep in mind that the results are based on a sample and are therefore subject to sampling variability, often referred to as "sampling error." The degree of uncertainty for an estimate (e.g., a particular percentage from the survey) arising from sampling variability is represented through the use of a margin of error. A sampling margin of error at the "95% confidence level" can be interpreted as providing a 95% probability that the interval created by the estimate plus and minus the margin of error contains the true value. (The "true" value would be known only if everyone in the target market was surveyed rather than just a sample.) In addition to sampling variability, results may be subject to various sources of non-sampling error (e.g., non-response bias, respondent misinterpretation of question wording, etc.). The degree of non-sampling error is not represented by the sampling margin of error and is usually unknown.

For a "sample size" of 500 survey respondents, the "maximum" margin of sampling error for percentages from the survey is +/- 4.4 percentage points at the 95% confidence level. Here, "maximum" refers to the margin of error being highest for proportions from the survey near 50%, while the margin of error declines as percentages get further from 50%. For example, given the same sample size of 500 respondents, a result from the survey near 10% or 90% would have a margin of sampling error of +/- 2.6 percentage points.

The margin of sampling error increases as the sample size decreases. Thus, when a question is asked of only a subset of the total sample, the associated margin of sampling error is larger than that quoted above. Also, even if a question is asked of all respondents, when examining results for a particular subgroup, the margin of sampling error depends on the number of respondents in that subgroup. For example, the "maximum" margin of sampling error would be +/- 9.8 percentage points at the "95% confidence level" when based on a subgroup of 100 survey respondents. In some parts of this report, results are shown for subgroups that include a fairly small number of respondents, and caution is recommended when thinking about these findings.

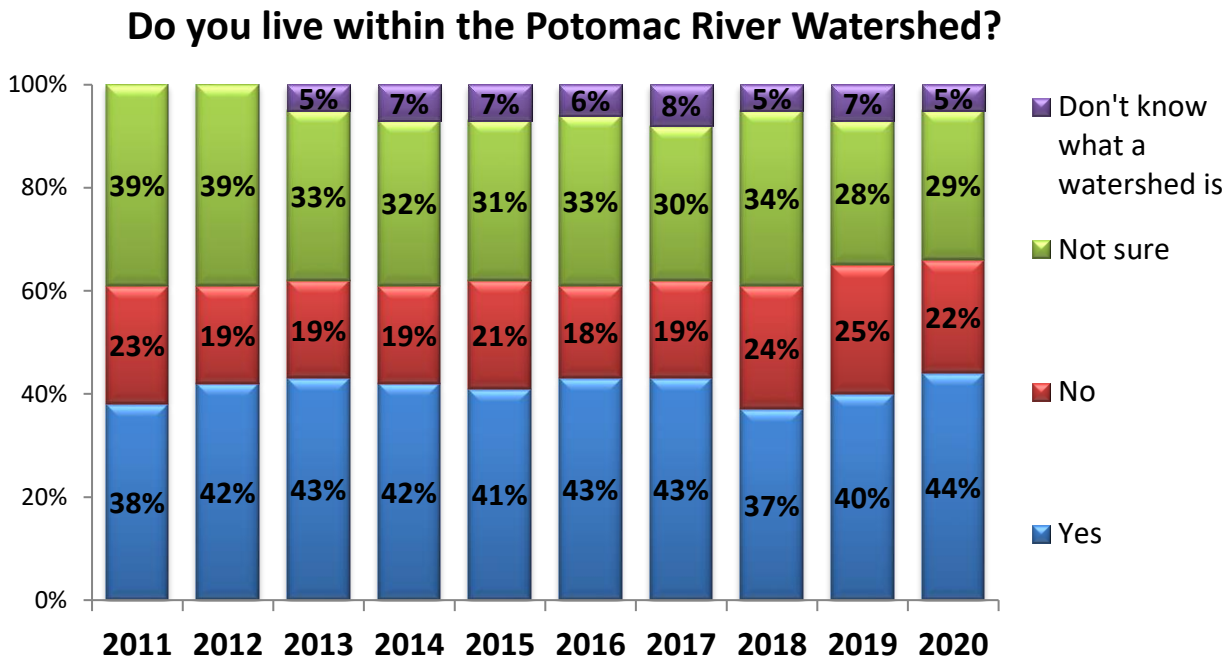
This suggests that results for different subgroups can be considered "similar" when the differences are small (i.e., small enough to be within the range of sampling error).

Results from different years can be considered similar when differences between the years are small. If the difference between two years is referred to as "statistically significant," this essentially means that the difference in the survey results is large enough to be highly confident (i.e., at the "95% confidence level") that there has been a real change. That is, a "statistically significant" difference in the survey results from one year to the next is larger than what would usually be expected from sampling error alone.

In this report, when a result from 2020 is described as "significantly" higher (or lower) than the result from a previous year, this means that the difference between these years is "statistically significant." Also, when one subgroup is described as "more likely" (or "less likely") than another subgroup to answer in a particular way, this is based on a statistically significant difference.

Potomac River Watershed

- Early in the survey, respondents were asked if they lived within the "Potomac River Watershed." As shown in the chart below, more than four-in-ten (44%) in 2020 believed that they did in fact live within the Potomac River Watershed. This was the highest result over the past 10 years. The difference between 40% in 2019 and 44% in 2020 was not large enough to be statistically significant, but the difference between 37% in 2018 and 44% in 2020 was statistically significant.



- When breaking the results out by area, as shown in the table below, the proportion answering "Yes" was lowest in the Dumfries / Stafford area, but the differences between areas were not statistically significant.

Live Within Potomac River Watershed	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	53%	49%	43%	41%	40%
No	27%	18%	21%	21%	30%
Not sure	20%	23%	32%	30%	25%
Don't know what a watershed is	0%	10%	4%	8%	5%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

- As shown in the next table, those who have been in their current residence for less than 4 years were less likely than those who have been in their current residence for 4 or more years to say they live within the Potomac River Watershed.

Live Within Potomac River Watershed	**Have Lived in Current Residence < 4 Years**	**4 to 9 Years**	**10 to 19 Years**	**20 or More Years**
Yes	33%	46%	52%	49%
No	28%	26%	17%	17%
Not sure	30%	25%	27%	31%
Don't know what a watershed is	9%	3%	4%	3%
N = number of respondents	*134*	*116*	*103*	*147*

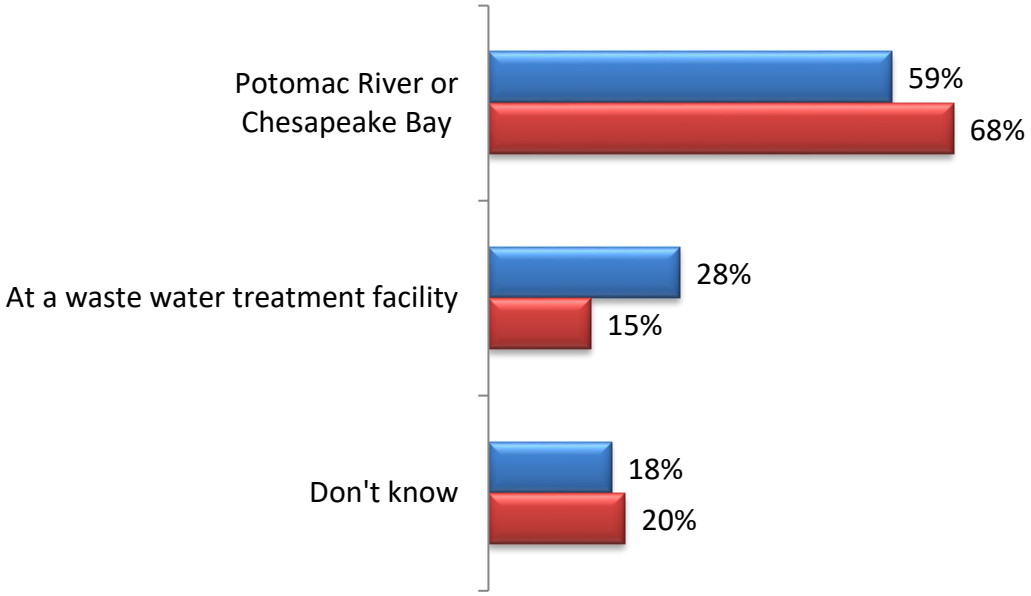
- The differences between age groups in the proportion answering "Yes" were not statistically significant in 2020.

Live Within Potomac River Watershed	**Age 21 to 34**	**35 to 44**	**45 to 54**	**55 to 64**	**65 +**
Yes	37%	47%	39%	47%	49%
No	35%	27%	20%	17%	14%
Not sure	22%	22%	37%	28%	34%
Don't know what a watershed is	6%	4%	4%	8%	3%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

- When examining the results by other subgroups, males were more likely than females and homeowners were more likely than renters to believe that they live within the Potomac River Watershed.

Live Within Potomac River Watershed	**Male**	**Female**	**Homeowners**	**Renters**	**Hispanic Respondents**
Yes	57%	31%	48%	31%	42%
No	17%	27%	22%	23%	22%
Not sure	22%	35%	28%	31%	29%
Don't know what a watershed is	4%	7%	2%	15%	7%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

"Storm water" runoff is rain or other water that flows into the street, along the gutter and into the storm drain. To the best of your knowledge, where do you believe storm water eventually ends up?



- More than half (59%) in 2020 felt that storm water runoff eventually ends up in the Potomac River or Chesapeake Bay, but this was significantly lower than in 2019 (68%). The results are shown for 2019 and 2020 only because the list of response options to select from was shortened in 2019 to just two options plus "Don't know." In 2018, 63% believed that storm water eventually ends up in the Potomac River or Chesapeake Bay.

- Results by various subgroups are shown on the next page. For example, the proportion selecting Potomac River or Chesapeake Bay was significantly higher among older respondents, among those who have lived in their current residence for 10 years or more, and among males.

Believed Destination of Storm Water	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Dumfries / Stafford
Potomac River or Chesapeake Bay	66%	55%	60%	57%	60%
At a waste water treatment facility	25%	26%	30%	26%	23%
Don't know	19%	23%	16%	20%	20%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

Believed Destination of Storm Water	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Potomac River or Chesapeake Bay	54%	53%	67%	65%
At a waste water treatment facility	22%	34%	31%	25%
Don't know	29%	20%	8%	14%
N = number of respondents	*134*	*116*	*103*	*147*

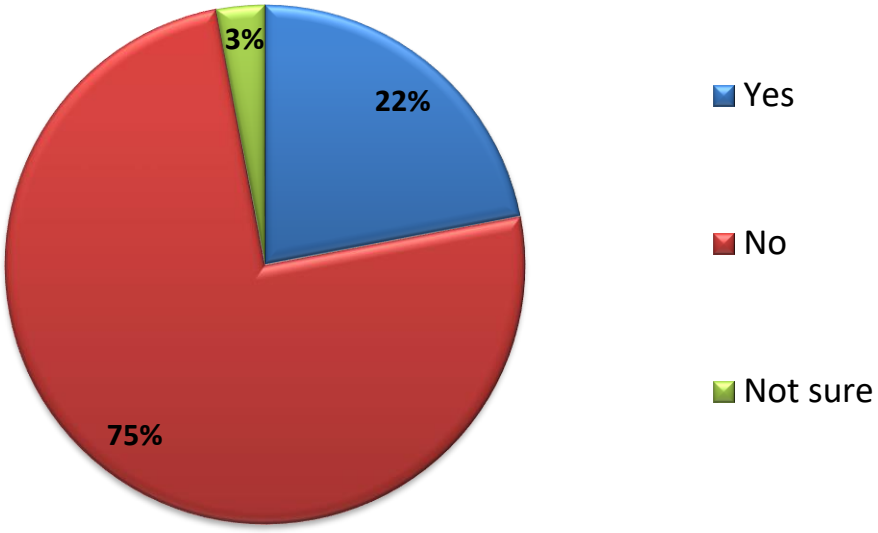
Believed Destination of Storm Water	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Potomac River or Chesapeake Bay	48%	50%	58%	66%	71%
At a waste water treatment facility	44%	38%	22%	16%	19%
Don't know	18%	22%	25%	19%	10%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Believed Destination of Storm Water	Male	Female	Homeowners	Renters	Hispanic
Potomac River or Chesapeake Bay	64%	54%	61%	55%	39%
At a waste water treatment facility	32%	23%	29%	23%	46%
Don't know	11%	26%	16%	24%	27%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

Advertising / Information About Reducing Water Pollution

- In 2020 a video of an advertisement featuring "rubber duckies" was presented in the survey, and respondents were asked if they had seen it on TV. A similar question was asked in 2019, but the 2019 question referred only to TV advertising, while the 2020 survey referred to TV, Facebook, or Twitter. In 2020, 22% recalled the ad. Although not comparable due to wording changes, 15% had recalled the advertising in 2019.

Please watch the video below. Before this survey, had you seen this ad, or a similar one on TV, Facebook, or Twitter about reducing water pollution?



- The proportion recalling the ad by area ranged from 15% to 27%, although the differences between areas were not statistically significant. As shown on the next page, those under age 45 and males were more likely than others to recall the ad.

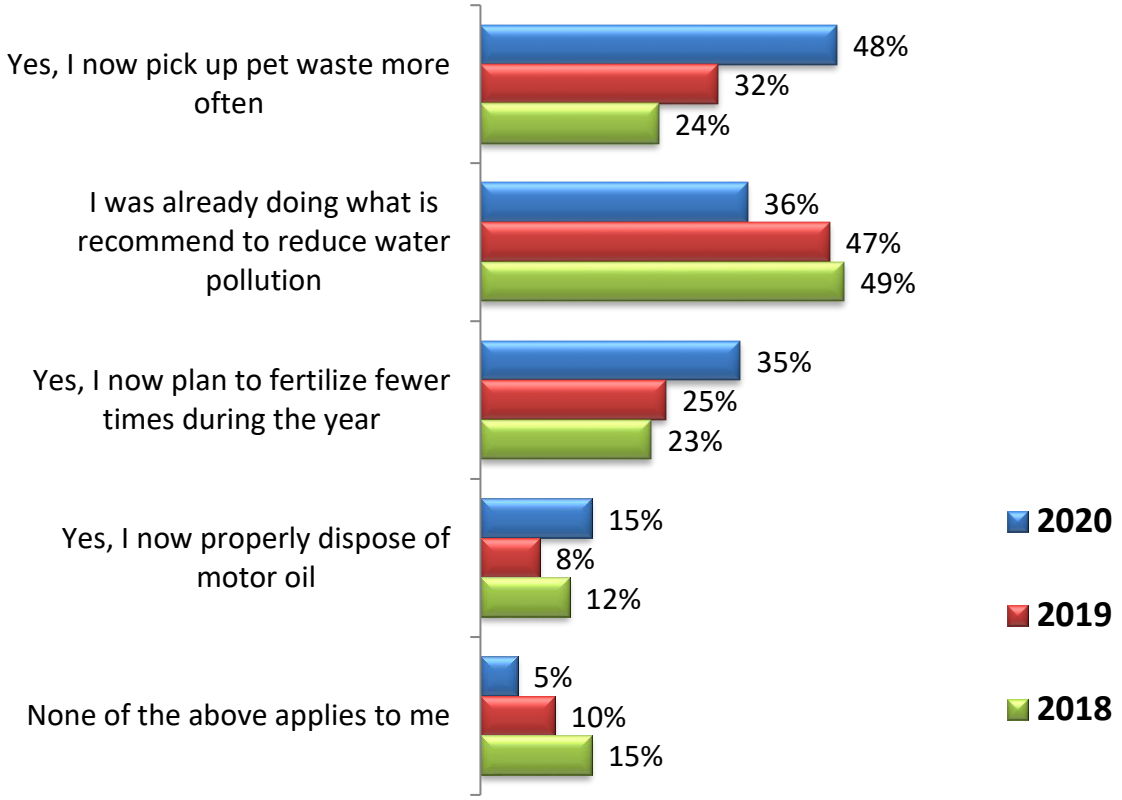
Saw TV Ads on Reducing Water Pollution	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	27%	19%	22%	25%	15%
No	71%	80%	75%	70%	85%
Not sure	2%	1%	3%	5%	0%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

Saw TV Ads on Reducing Water Pollution	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	17%	30%	27%	16%
No	81%	67%	69%	81%
Not sure	2%	3%	4%	3%
N = number of respondents	*134*	*116*	*103*	*147*

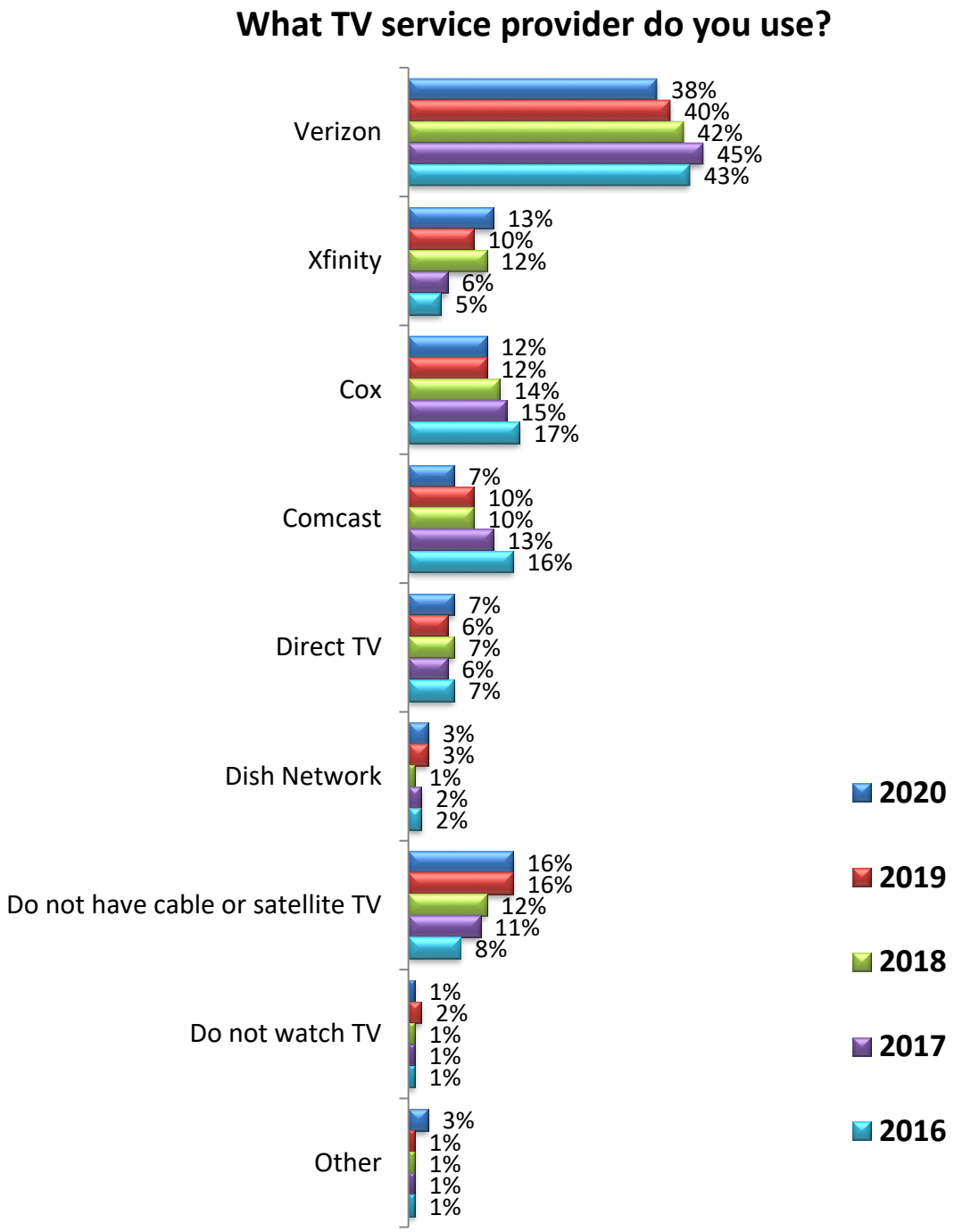
Saw TV Ads on Reducing Water Pollution	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	35%	41%	13%	9%	13%
No	64%	56%	82%	88%	85%
Not sure	1%	3%	5%	3%	2%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Saw TV Ads on Reducing Water Pollution	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	29%	15%	23%	17%	29%
No	68%	82%	74%	81%	66%
Not sure	3%	3%	3%	2%	5%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

Did seeing the ad(s) about reducing water pollution make you change any of your behaviors related to fertilizing less often and/or reducing water pollution?



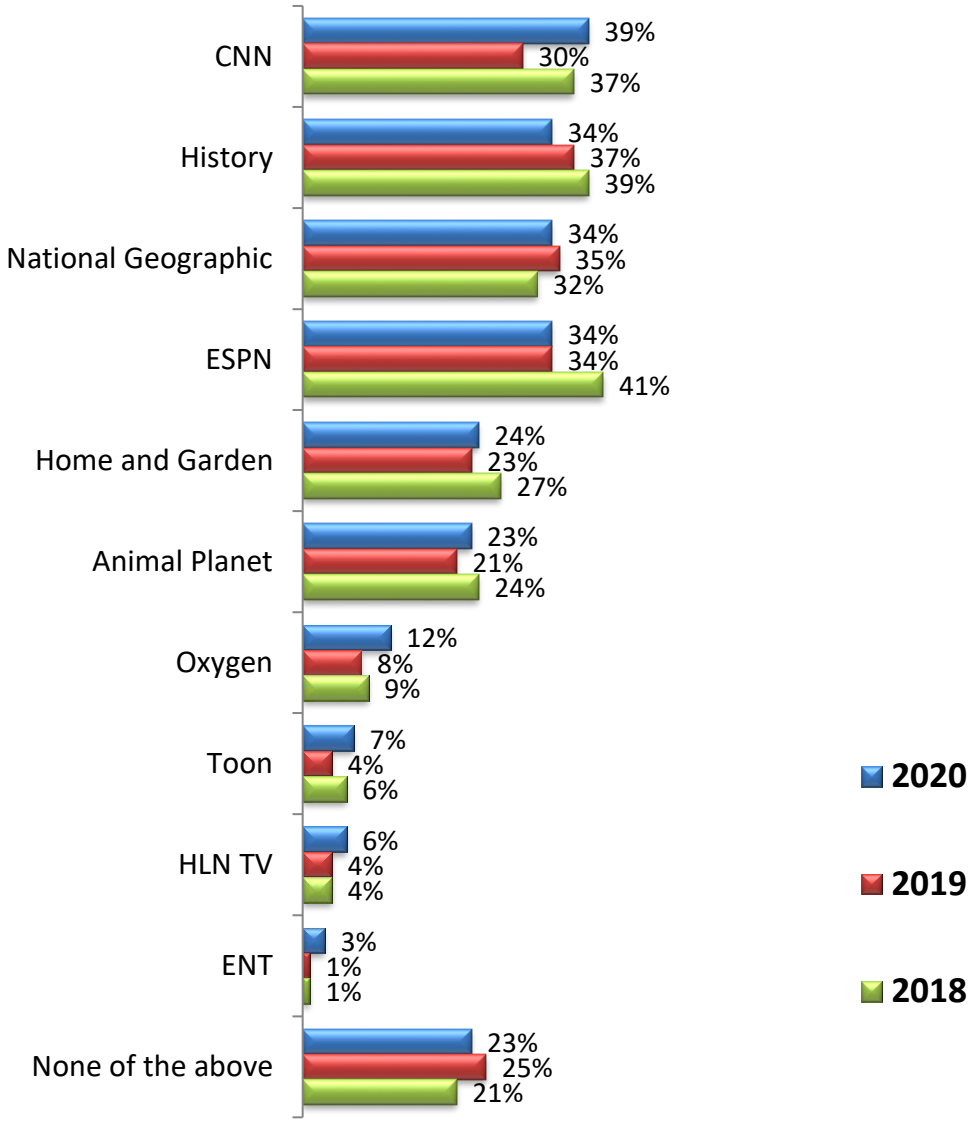
- Those who recalled the advertising where asked the question above, and noticeable proportions reported changing their behavior related to pet waste and fertilizing less often.



- Verizon was selected most often (by 38% in 2020) as their TV service provider.

- One reason for asking the question above was to determine if recall of the advertising differed by TV provider. Based on a separate analysis (not shown in chart), when looking at the providers with at least 30 respondents using the provider, the proportion recalling the ad was 36% among Direct TV users, 30% among Comcast users, 27% among Cox users, 22% among Xfinity users, and 20% among Verizon users.

Which of the following channels, if any, do you watch?

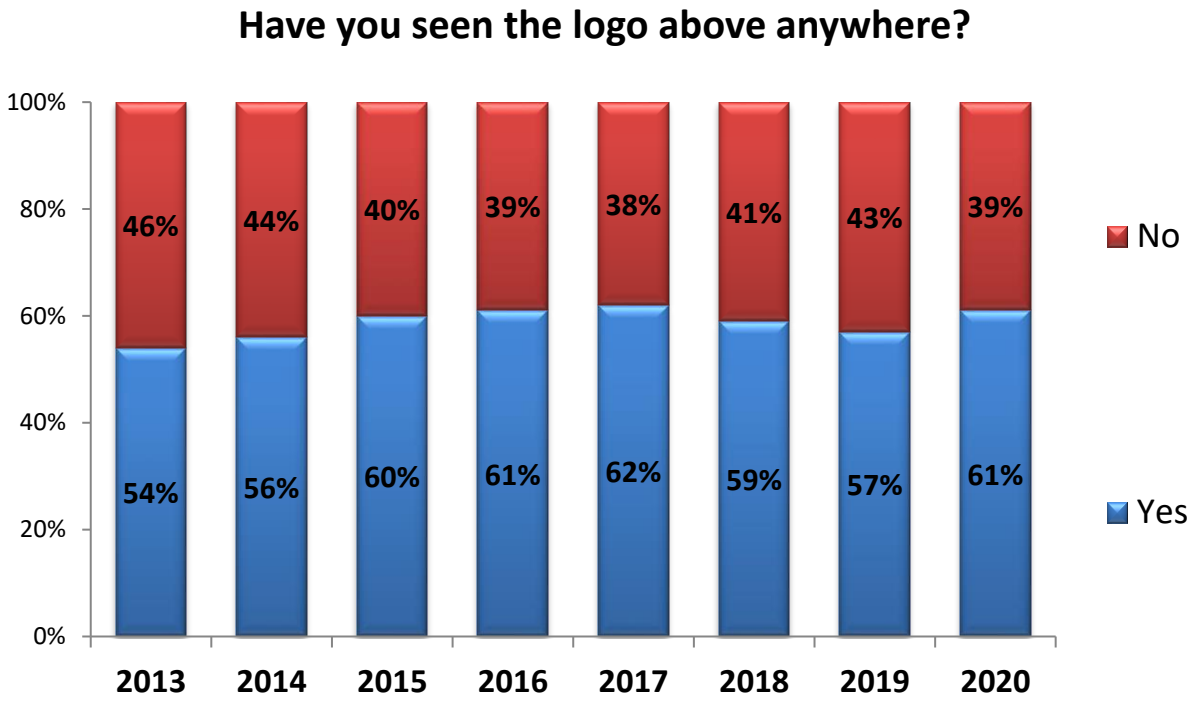


- Of the channels covered in the survey, CNN had the highest proportion reporting that they watch the channel in 2020 (39%), followed by the History Channel (34%), National Geographic (34%), and ESPN (34%).

- One reason for adding the question above was to determine if recall of the advertising differed by channels watched. Based on a separate analysis (not shown in chart), for eight of the channels, their viewers were significantly more likely than others to recall the advertising that was shown in the survey: HLN TV (54% of those who watched this channel recalled the advertising), Toon (47%), Animal Planet (42%), Oxygen (37%), ESPN (35%), Home & Garden (30%), CNN (28%), and National Geographic (28%).

- Among those who watched *none* of the channels above, only 7% recalled the advertising.

- The logo below was shown to all respondents regardless of whether they had seen advertising or not, and more than half of the total sample recognized the logo each year since 2013. The 2020 result (61%) was slightly below the peak result in 2017 (62%), but the 2020 result was significantly higher than in 2013 (54%).



- Results for the question above in 2020 by subgroup are shown on the next page. Interestingly, awareness was significantly lower in the Dumfries / Stafford area, and this was true last year as well. At the same time, males were more likely than females to recall the logo.

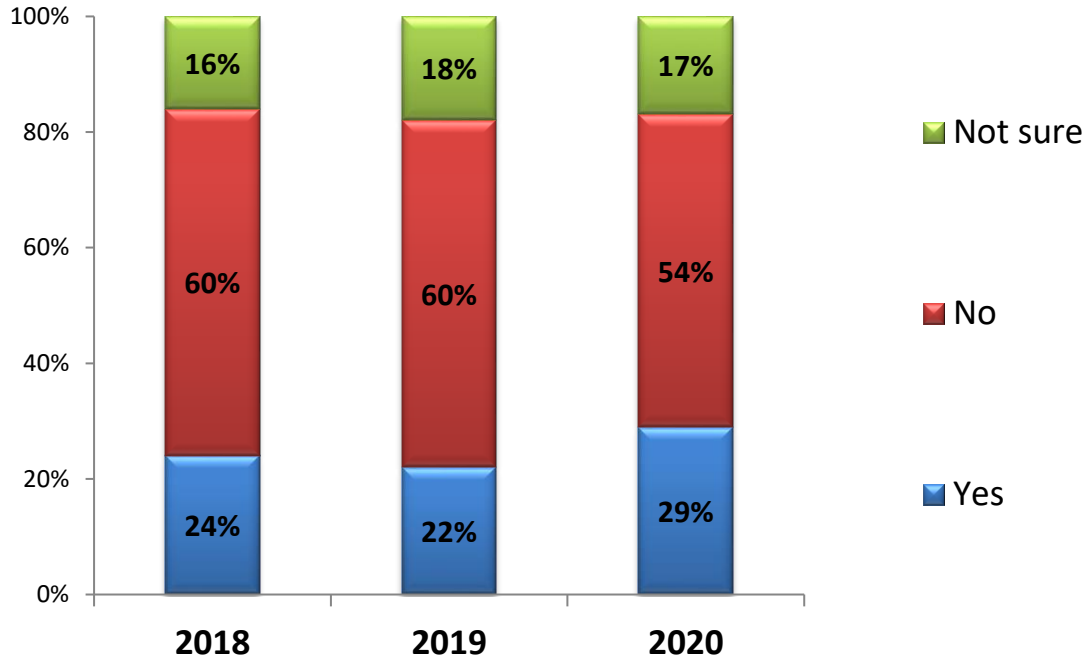
Have Seen Logo	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Dumfries / Stafford
Yes	66%	72%	61%	58%	38%
No	34%	28%	39%	42%	63%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

Have Seen Logo	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	59%	59%	60%	65%
No	41%	41%	40%	35%
N = number of respondents	*134*	*116*	*103*	*147*

Have Seen Logo	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	59%	66%	59%	63%	58%
No	41%	34%	41%	37%	42%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Have Seen Logo	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	69%	53%	63%	54%	51%
No	31%	47%	37%	46%	49%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

Regardless of whether you have seen that specific ad or logo, have you seen or received information about reducing water pollution from any source in the past 12 months?



- More than one-fourth (29%) reported that they have seen or received information about reducing water pollution in the past 12 months. The 2020 result (29%) was significantly higher than the 2019 result (22%), but the difference between 2018 and 2020 was not statistically significant.

- The proportion who received this information was significantly lower in Dumfries / Stafford than other areas.

Received Info. About Reducing Water Pollution	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	32%	33%	28%	37%	13%
No	58%	54%	52%	55%	65%
Not sure	10%	13%	20%	8%	22%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

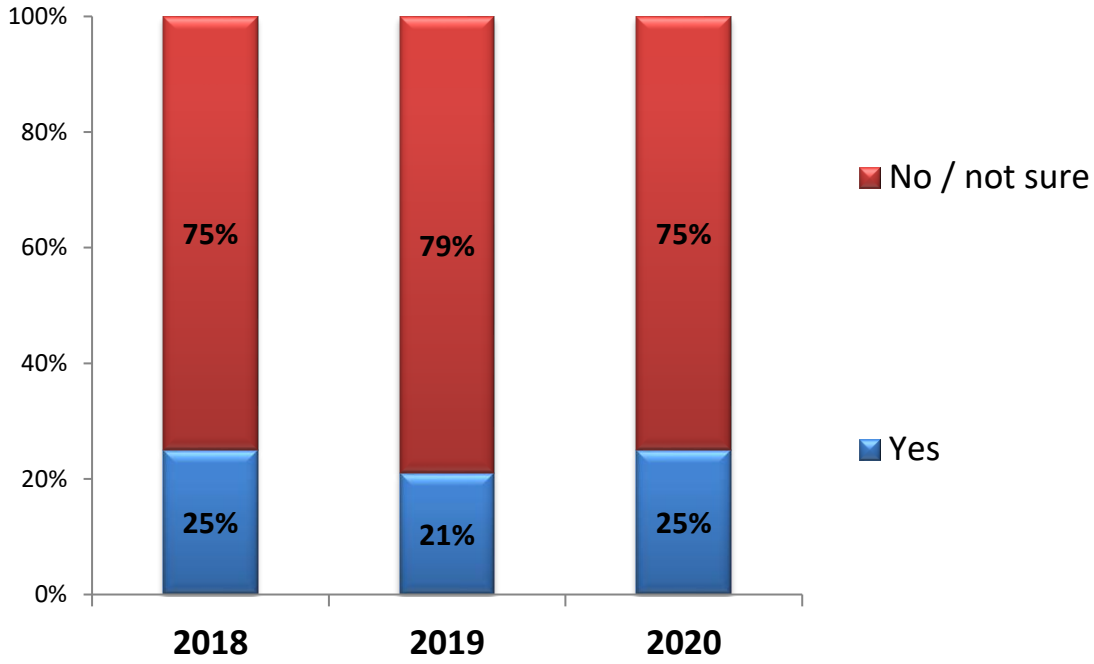
Received Info. About Reducing Water Pollution	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	22%	35%	29%	31%
No	63%	53%	51%	50%
Not sure	15%	12%	20%	19%
N = number of respondents	*134*	*116*	*103*	*147*

Received Info. About Reducing Water Pollution	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	35%	44%	28%	22%	20%
No	56%	42%	55%	62%	56%
Not sure	9%	14%	17%	16%	24%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Received Info. About Reducing Water Pollution	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	37%	22%	31%	21%	34%
No	48%	60%	52%	63%	51%
Not sure	15%	18%	17%	16%	15%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

- Males and homeowners were more likely than others to report receiving this information. By age, the highest proportion receiving this information was among those age 35 to 44.

Thinking about the last 12 months, have you heard about any opportunities to participate in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?



- One-fourth (25%) in 2020 reported hearing about opportunities to participate in a water quality activity in the past 12 months. By subgroup, those living in their residence less than four years and those age 45 or older were less likely than others to hear about these opportunities, while males and homeowners were more likely.

Heard of Water Quality Activities Past 12 Months	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	29%	30%	24%	22%	25%
No / not sure	71%	70%	76%	78%	75%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

Heard of Water Quality Activities Past 12 Months	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	15%	35%	26%	26%
No / not sure	85%	65%	74%	74%
N = number of respondents	*134*	*116*	*103*	*147*

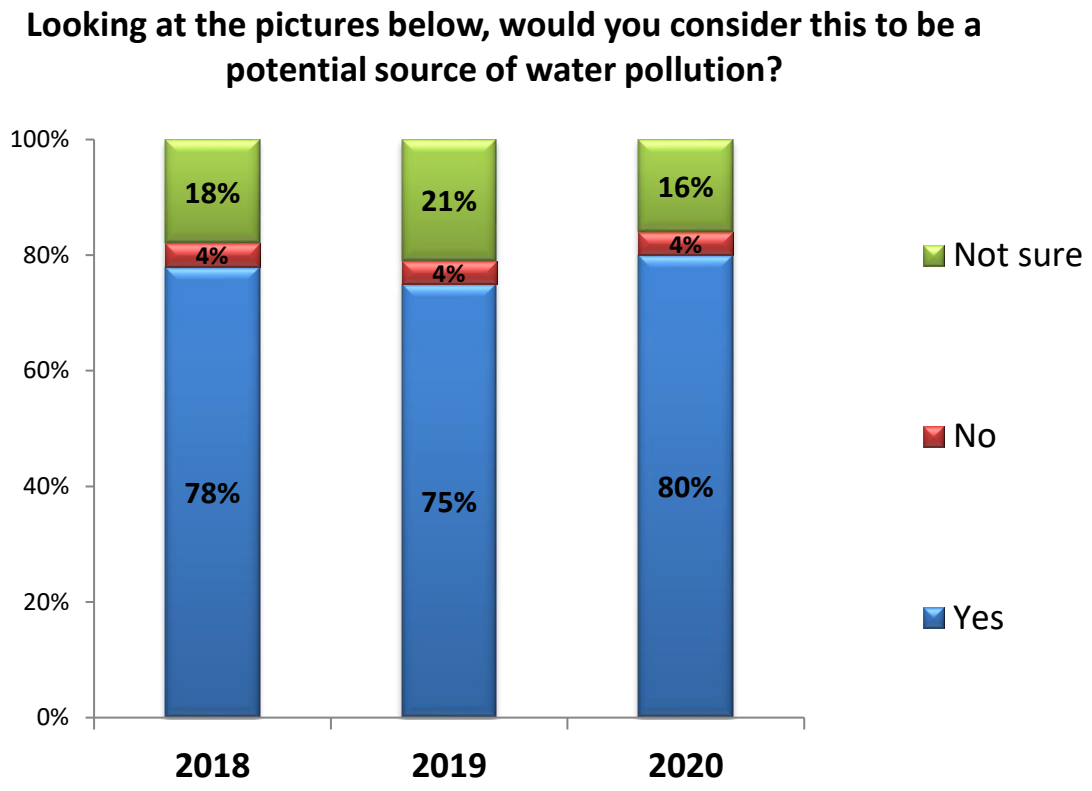
Heard of Water Quality Activities Past 12 Months	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	40%	40%	13%	16%	17%
No / not sure	60%	60%	87%	84%	83%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Heard of Water Quality Activities Past 12 Months	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	32%	18%	28%	16%	41%
No / not sure	68%	82%	72%	84%	59%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

- In a separate question asked only of those who answered "Yes" to the question on the previous page, 60% indicted that they *participated* in a water quality activity. Since this 60% applies to the 25% who answered "Yes" to the question on the previous page, it turns out that 15% (= 60% x 25%) of the total sample reported both hearing about *and* participating in a water quality activity in the past 12 months.

Potential Water Pollution Source

- Two pictures were shown to the survey respondents in 2018, 2019, and 2020, and they were asked the question below. (The images used can be found in the questionnaire in the Appendix.)



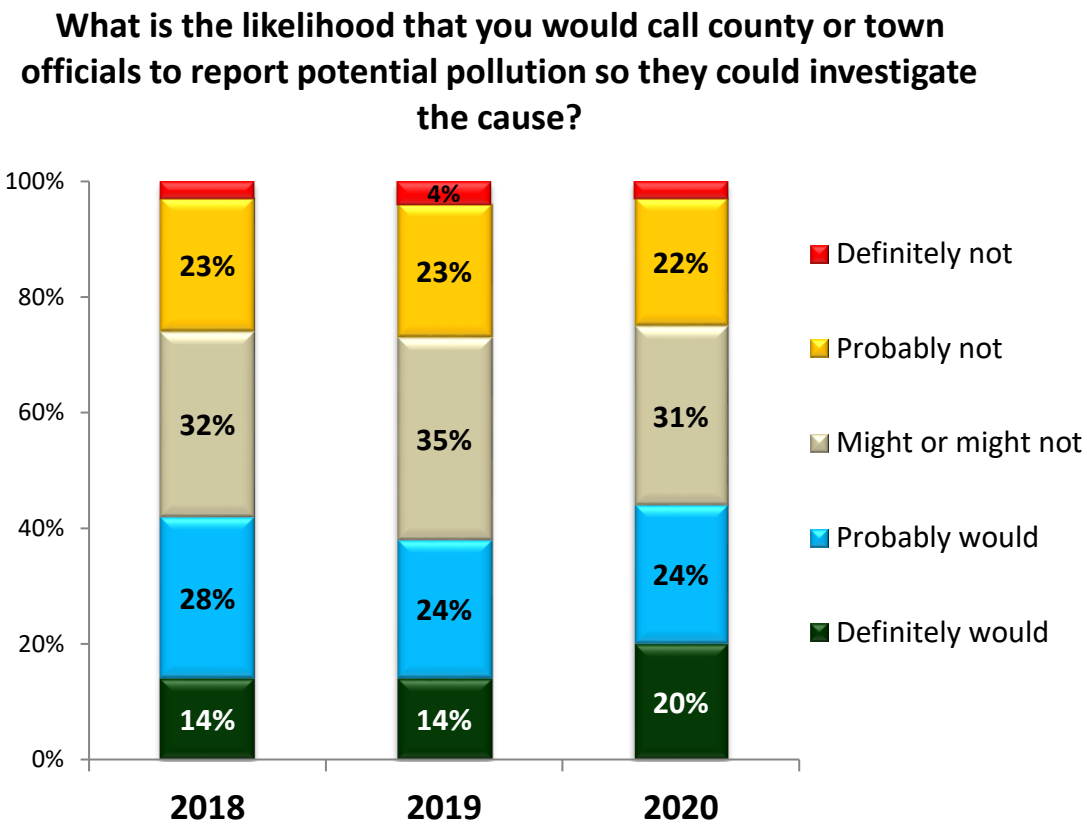
- Eight-in-ten (80%) in 2020 felt that the pictures showed a potential source of water pollution. As shown in the table below and the tables on the next page, the proportion feeling this way was high in all of the subgroups examined.

Consider it Potential Source of Water Pollution	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	86%	81%	77%	78%	85%
No	9%	0%	5%	3%	8%
Not sure	5%	19%	18%	19%	7%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

Consider it Potential Source of Water Pollution	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	81%	76%	82%	79%
No	5%	9%	4%	1%
Not sure	14%	15%	14%	20%
N = number of respondents	*134*	*116*	*103*	*147*

Consider it Potential Source of Water Pollution	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	79%	80%	74%	78%	84%
No	7%	5%	7%	3%	2%
Not sure	14%	15%	19%	19%	14%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Consider it Potential Source of Water Pollution	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	83%	76%	82%	72%	81%
No	5%	4%	3%	9%	7%
Not sure	12%	20%	15%	19%	12%
N = number of respondents	*253*	*247*	*388*	*112*	*41*



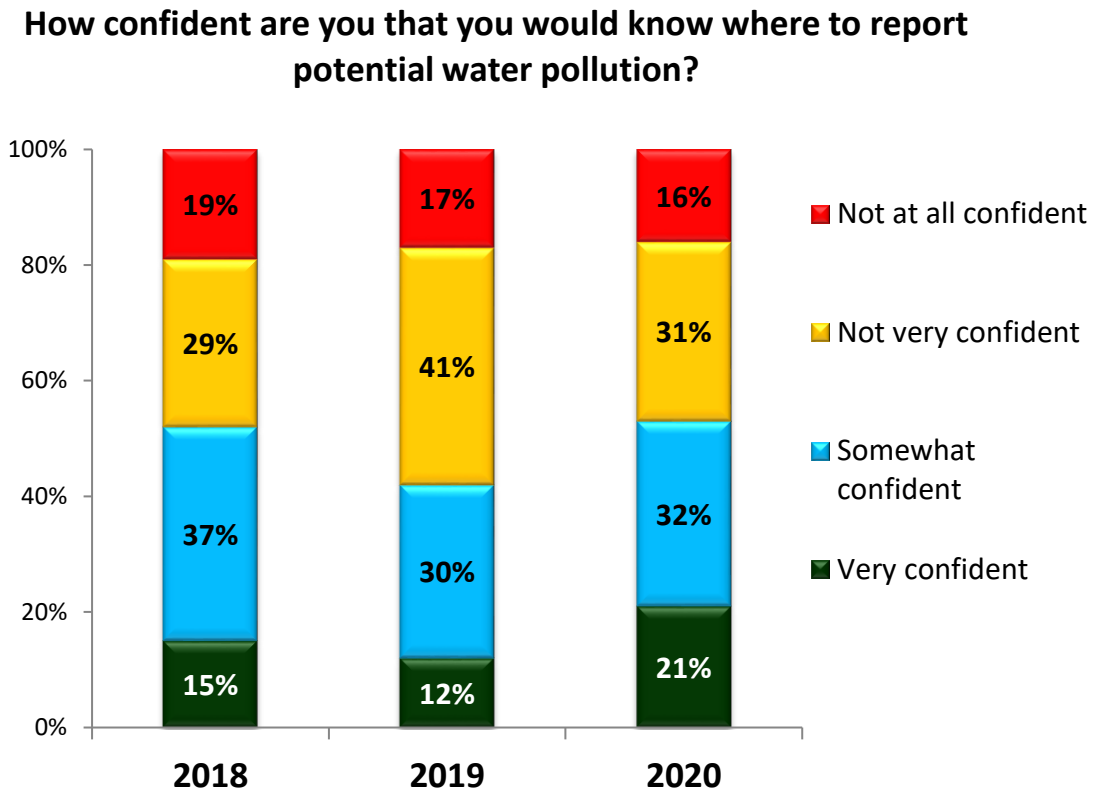
- One-in-five (20%) felt that they "Definitely would" report potential pollution to county or town officials. Those age 35 to 44, males, and those of Hispanic heritage were more likely than others to rate "Definitely would."

Likelihood Report Potential Pollution	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Definitely would	27%	16%	19%	22%	20%
Probably would	26%	20%	24%	24%	27%
Might or might not	24%	31%	32%	30%	35%
Probably would	20%	29%	21%	24%	18%
Definitely not	3%	4%	4%	0%	0%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

Likelihood Report Potential Pollution	**Have Lived in Current Residence < 4 Years**	**4 to 9 Years**	**10 to 19 Years**	**20 or More Years**
Definitely would	17%	24%	23%	18%
Probably would	28%	27%	18%	21%
Might or might not	23%	29%	35%	36%
Probably would	29%	16%	22%	22%
Definitely not	3%	4%	2%	3%
N = number of respondents	*134*	*116*	*103*	*147*

Likelihood Report Potential Pollution	**Age 21 to 34**	**35 to 44**	**45 to 54**	**55 to 64**	**65 +**
Definitely would	24%	38%	13%	10%	16%
Probably would	28%	20%	23%	21%	26%
Might or might not	17%	23%	34%	41%	37%
Probably would	26%	16%	25%	26%	20%
Definitely not	5%	3%	5%	2%	1%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Likelihood Report Potential Pollution	**Male**	**Female**	**Homeowners**	**Renters**	**Hispanic Respondents**
Definitely would	25%	15%	21%	15%	39%
Probably would	25%	22%	22%	31%	24%
Might or might not	29%	33%	32%	25%	27%
Probably would	19%	26%	22%	24%	5%
Definitely not	2%	4%	3%	5%	5%
N = number of respondents	*253*	*247*	*388*	*112*	*41*



- Approximately one-in-five (21%) in 2020 were "Very confident" that they would know where to report potential water pollution. Males, homeowners, and those of Hispanic heritage were more likely than others to give a rating of "Very confident." Those who have been in their current residence for less than 4 years were less likely than others to rate "Very confident."

Confidence Know Where to Report	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Very confident	31%	22%	17%	24%	20%
Somewhat confident	32%	22%	35%	29%	35%
Not very confident	25%	30%	31%	33%	37%
Not at all confident	12%	26%	17%	14%	8%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

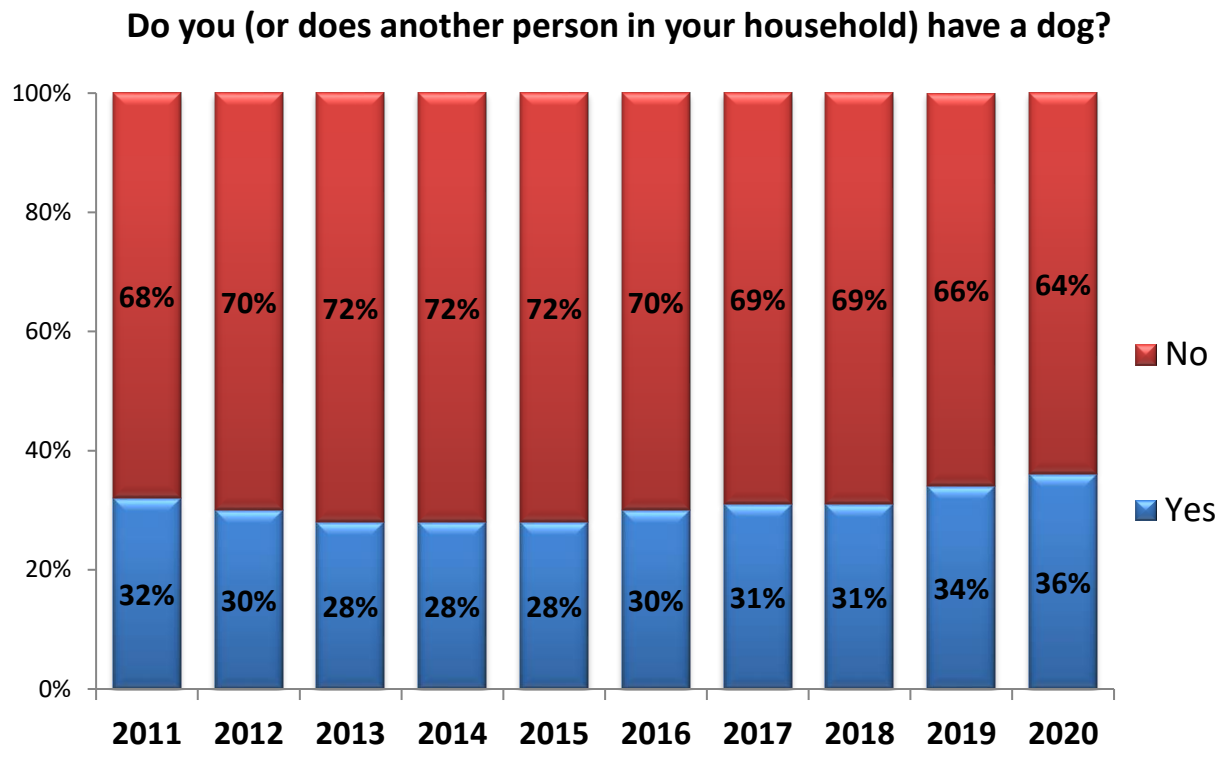
Confidence Know Where to Report	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Very confident	11%	28%	23%	22%
Somewhat confident	29%	31%	33%	34%
Not very confident	34%	28%	32%	30%
Not at all confident	26%	13%	12%	14%
N = number of respondents	*134*	*116*	*103*	*147*

Confidence Know Where to Report	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Very confident	24%	35%	16%	11%	18%
Somewhat confident	33%	17%	35%	35%	37%
Not very confident	23%	30%	36%	35%	32%
Not at all confident	20%	18%	13%	19%	13%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Confidence Know Where to Report	Male	Female	Homeowners	Renters	Hispanic Respondents
Very confident	29%	12%	24%	11%	39%
Somewhat confident	35%	28%	32%	31%	29%
Not very confident	26%	37%	30%	35%	20%
Not at all confident	10%	23%	14%	23%	12%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

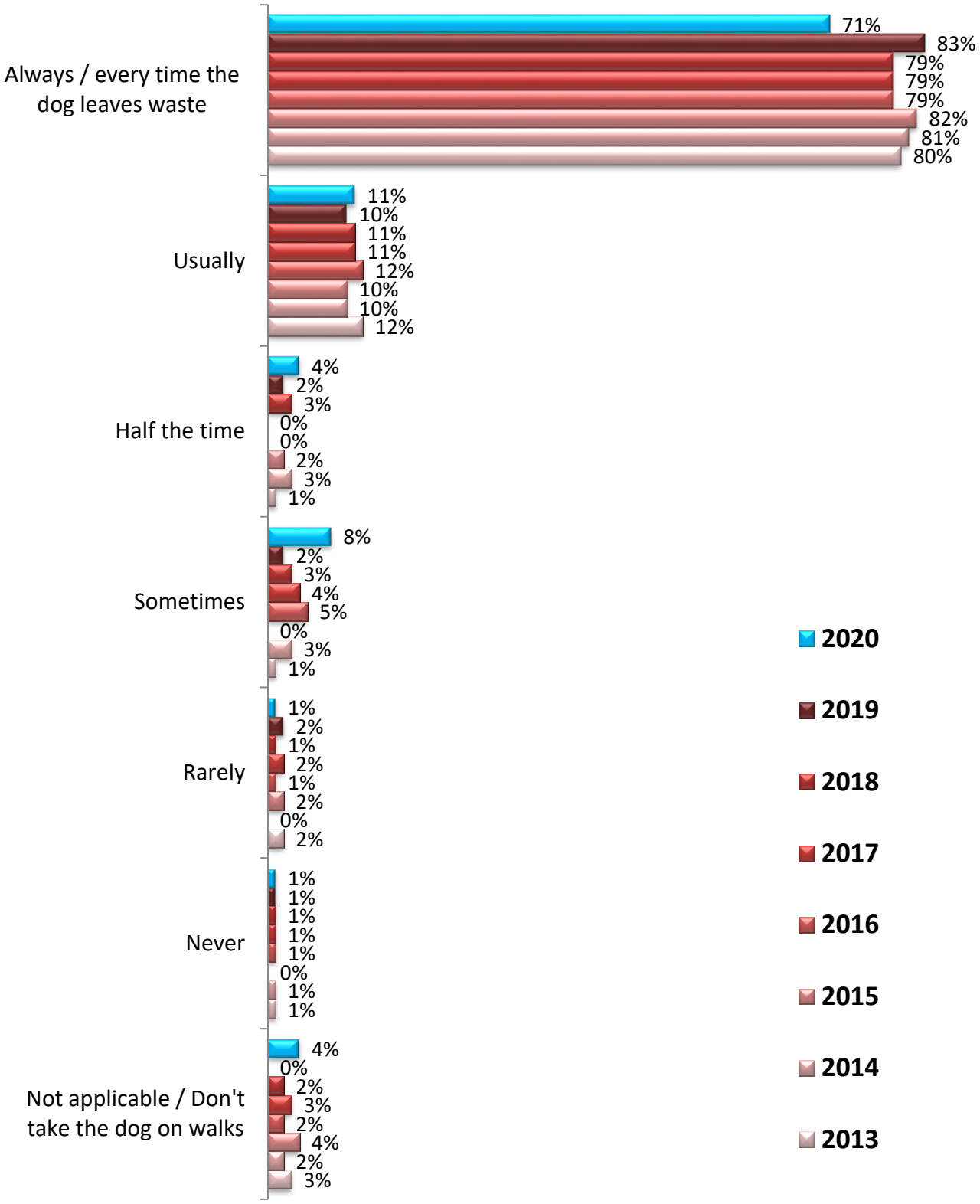
Behavior Among Dog Owners

- Slightly more than one-third (36%) in 2020 indicated that they have a dog (or someone else in their household has a dog).

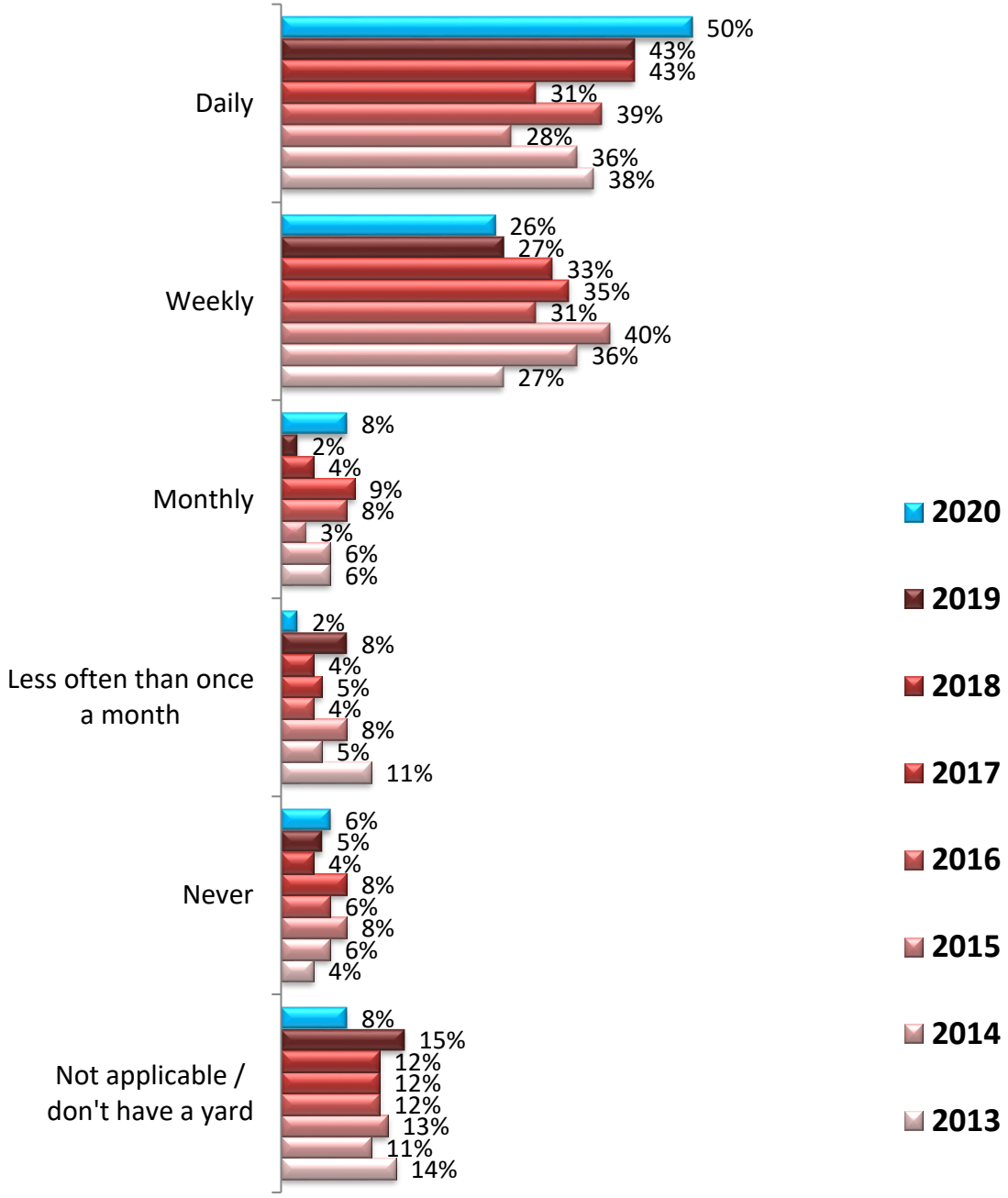


- On the following pages, results are shown for questions about how often dog owners pick up after their dogs and what motivates them to do so. For example, more than two-thirds (71%) in 2020 – not as high as in previous years – indicated that they *always* pick up after their dog(s) when taking the dog(s) for a walk.

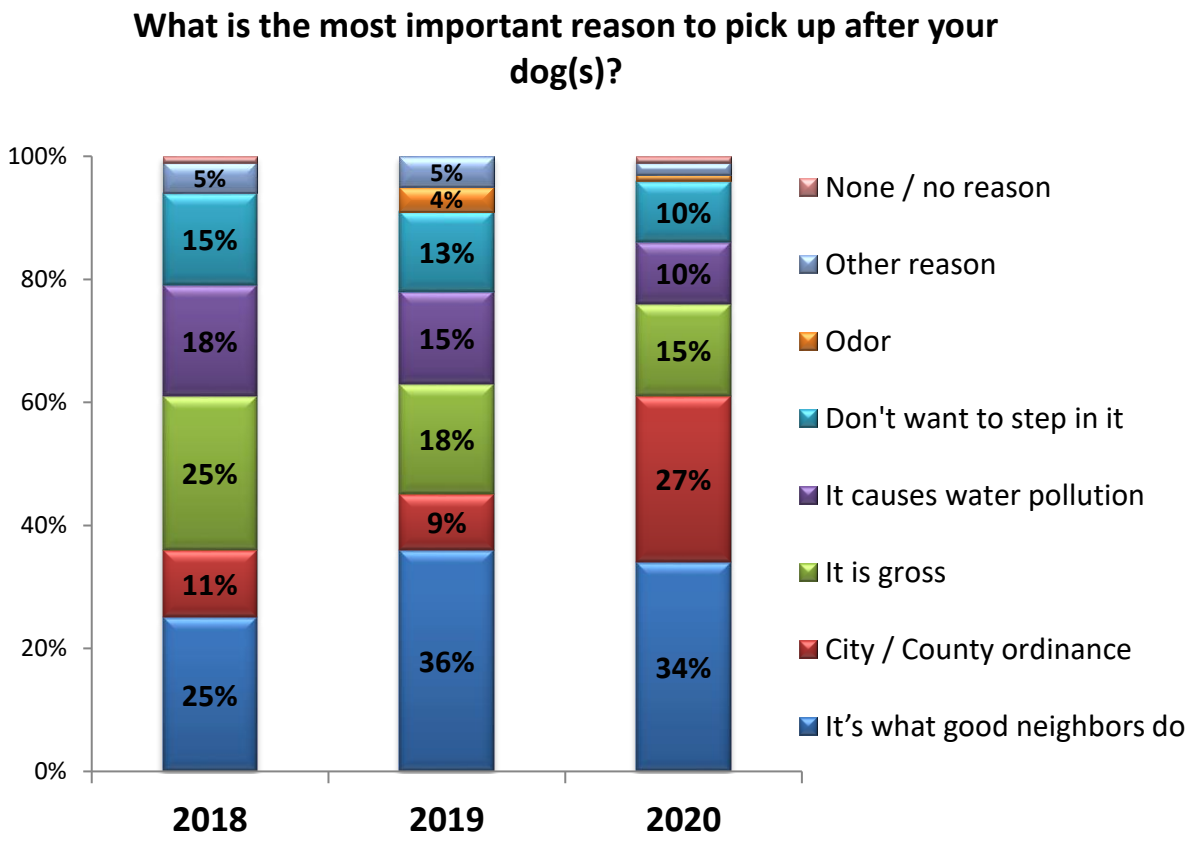
When taking your dog(s) for a walk, how often do you pick up after your dog(s)?



How often do you (or does someone else from your household) remove dog waste from your yard?



- In their own yard, the majority removed pet waste daily or weekly.
- There was some fluctuation from year to year in the proportions reporting daily and weekly removal of dog waste from their yard, but recall that this question was asked only of dog owners, and the sample size of dog owners is lower than the total sample size, while the margin of error is higher for a lower sample size.

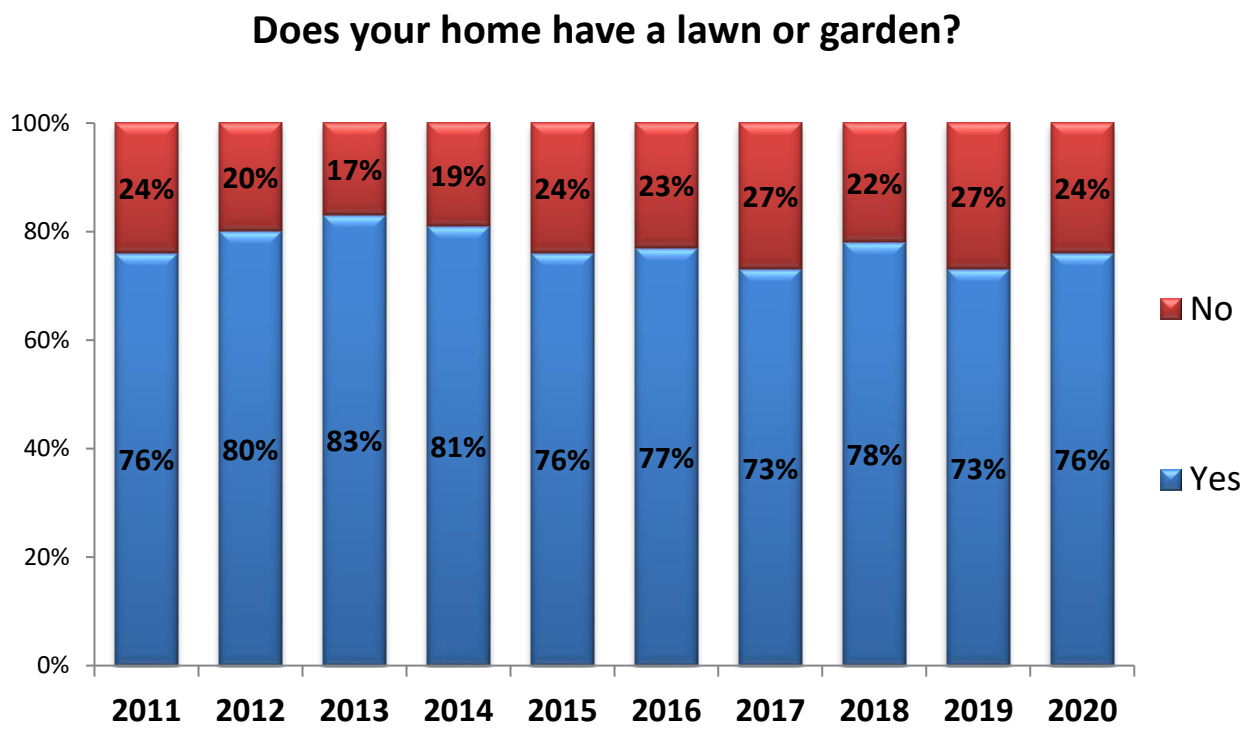


- When asked about the "Most important reason" for picking up after their dog(s), more than one-third (34%) in 2020 selected "It's what good neighbors do."

- Compared to 2018 and 2019, a significantly higher proportion in 2020 selected city / county ordinance (27%) as their most important reason to pick up after their dog(s).

Behavior Related to Lawns & Gardens

- Approximately three-fourths (76%) in 2020 indicated that their current home has a lawn or garden.

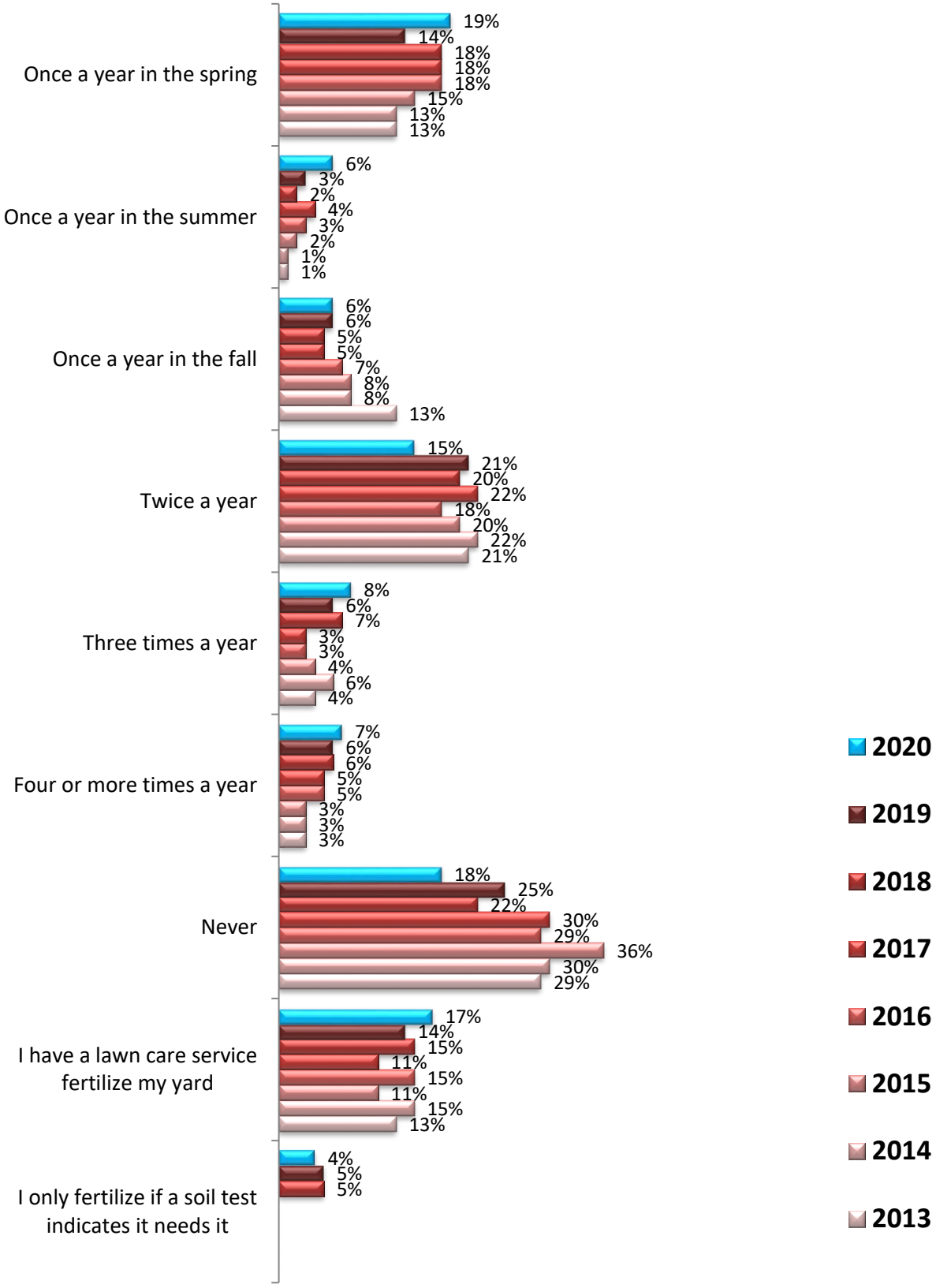


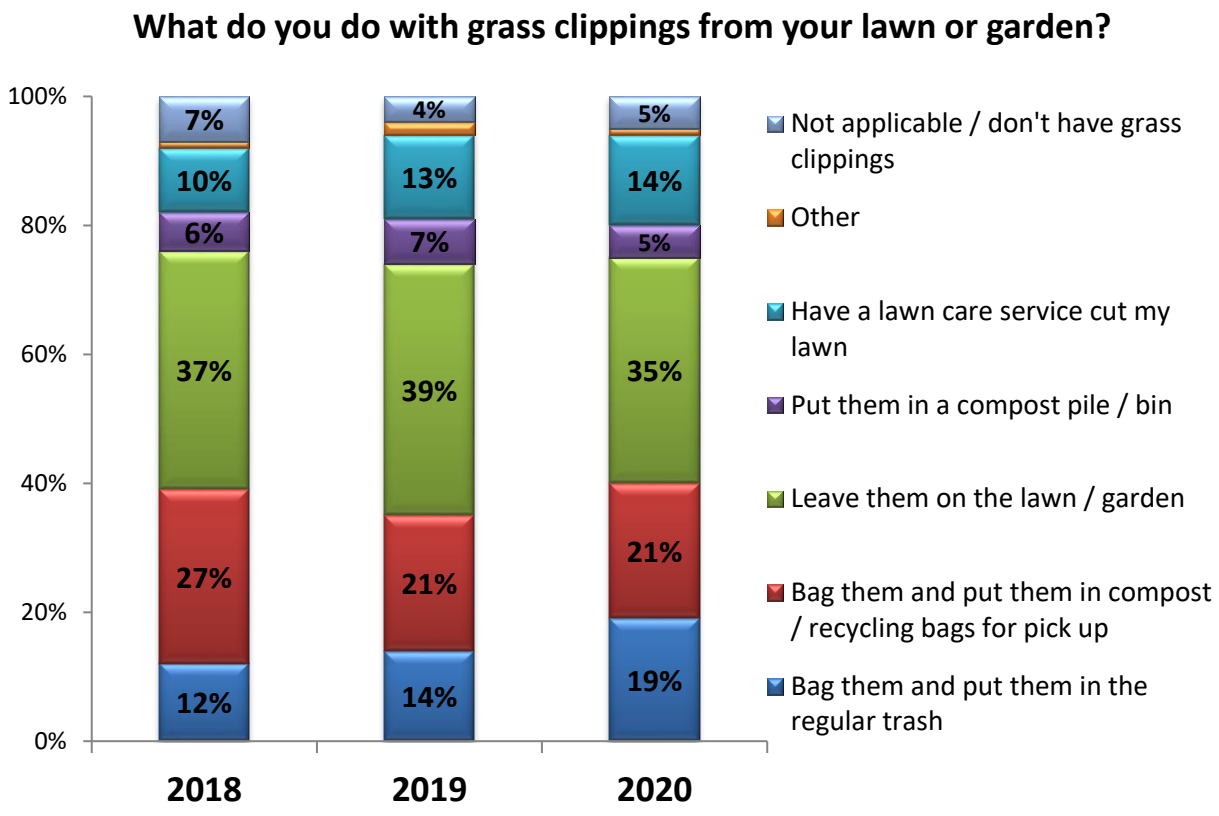
- In a separate question, of the respondents who have a lawn or garden, nearly eight-in-ten (79%) in 2020 identified themselves as the primary person taking care of the lawn or garden or as being familiar with the practices used for the garden or lawn. Several questions about lawns and gardens were then asked only of these respondents.

- As shown on the next page, the most common response when asked how frequently they fertilize was "Once a year in the spring" (19%), followed closely by "Never" (18%), and "I have a lawn care service fertilize my yard (17%).

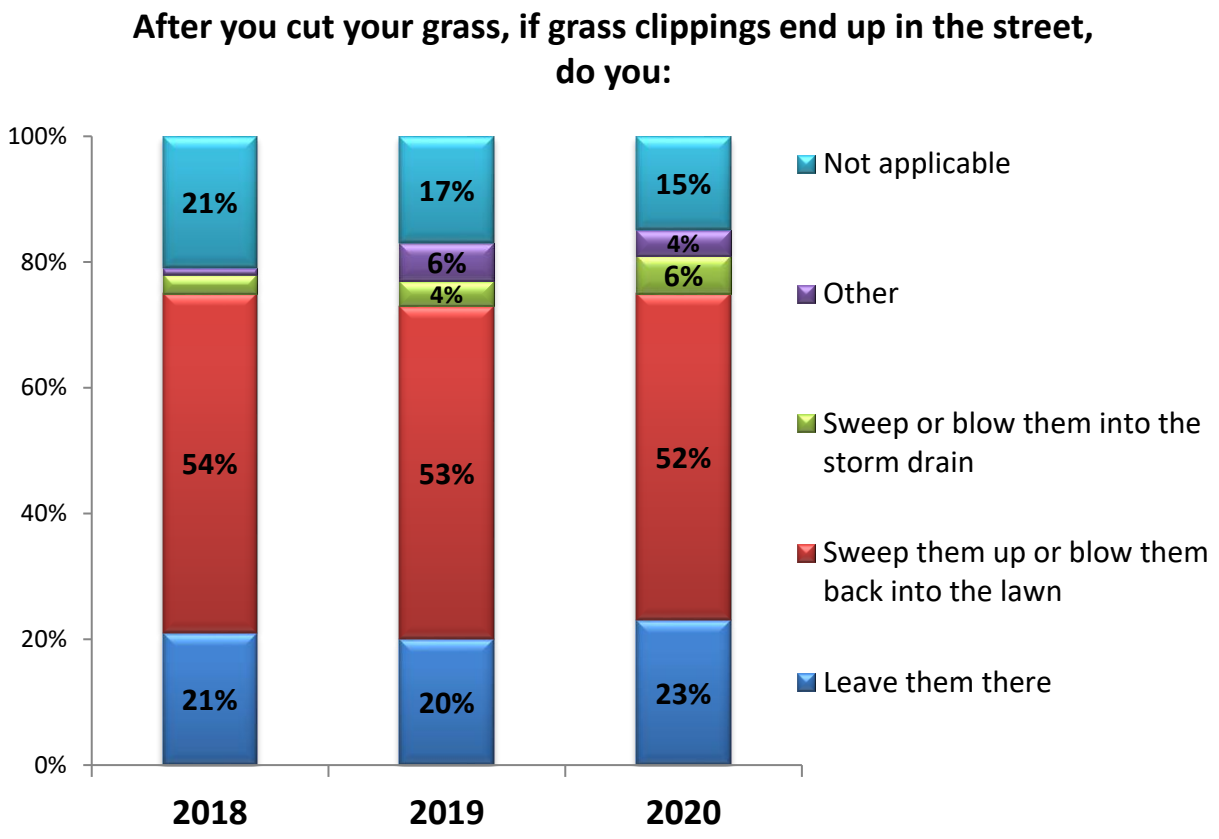
- The option "I only fertilize if a soil test indicates the grass needs fertilizer" was first introduced in the 2018 survey.

Which of the following best describes how often you fertilize your lawn?



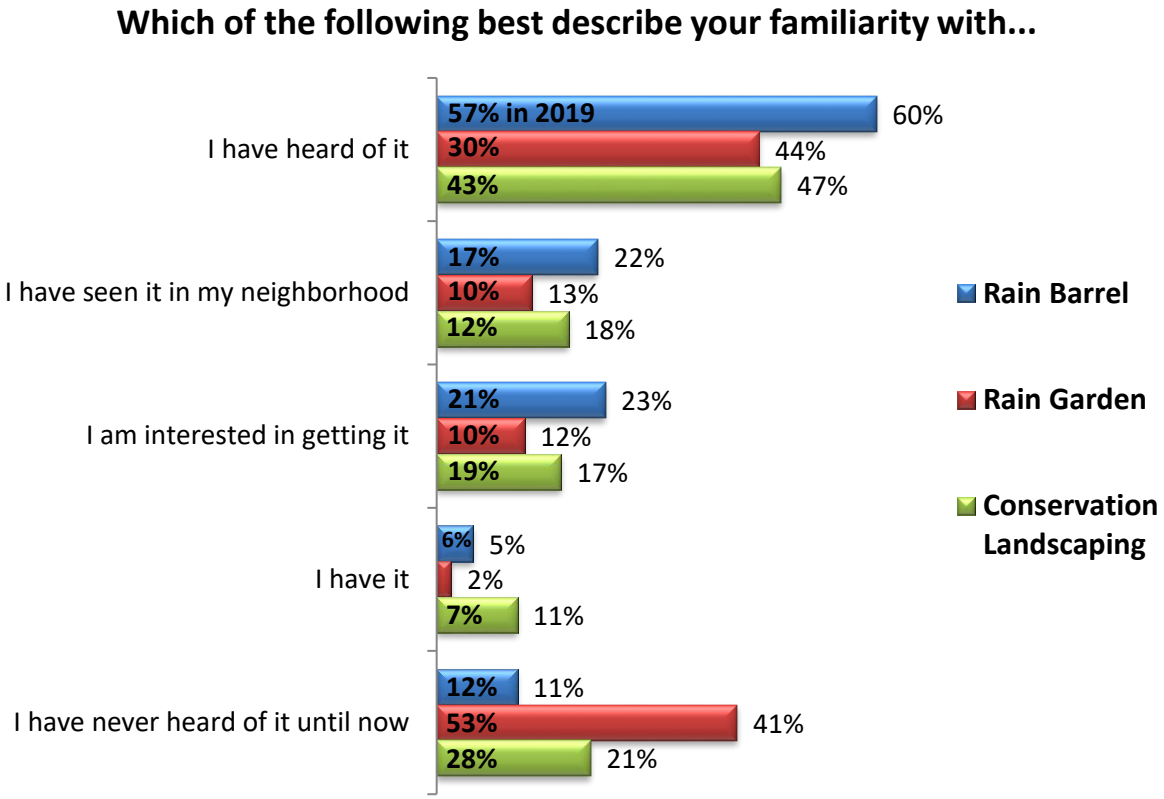


- Slightly more than one-third (35%) in 2020 leave their grass clippings on their lawn / garden, while approximately one-fifth (21%) bag grass clippings from their lawn / garden and put them in compost / recycling bags for pick up.



- More than half (52%) in 2020 sweep them up or blow them back into the lawn if they have grass clippings end up in the street.

- Some (15%) in 2020 felt this question was not applicable to them. This is higher than the proportion selecting "Not applicable" for the question on the previous page, but there is more than one reason that the question above may not be applicable. One reason is that they might not have grass clippings. Another reason is that they might not have grass clippings end up in the street.



- After reading a description of a rain barrel, rain garden, and conservation landscaping, respondents were asked which of the categories in the chart above applied to them. For example, 5% in 2020 reported having a rain barrel, while 2% reported having a rain garden, and 11% reported having conservation landscapes in their yard. Note that the numbers at the end of the bars show 2020 results, while 2019 results are shown to the left and inside the bar. This format was used to allow side-by-side comparisons between rain barrel, rain garden, and conservation landscaping, as well as allowing year-to-year comparisons.

- Those who indicated having the item typically did not also select "I have heard of it." For a few cases in which a respondent selected both "I have heard of it" and "I have it," the data was "cleaned" so that the respondent did not have "I have heard of it" selected. This means that these two response options do not overlap in the results shown above. In other words, the first response option in the chart above means that they do not have one but they have heard of it.

- As a technical note, in place of "it" that shows in the chart, the survey showed rain barrel, rain garden, or conservation landscaping (in three different questions). The reason for rewording the response options for the chart was to facilitate comparisons between the three items.

Behavior Related to Automobiles

- When asked about changing the oil in their car or truck, a strong majority each year reported that they use an oil change service, while 11% in 2020 reported taking old motor oil to a gas station or hazmat facility for recycling. A small number of respondents selected other response options. Because the number selecting some response options was very small, the results are shown in the tables below, with the frequency (number of respondents selecting each response) and the percentage.

2020: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	367	73.4%
Take the old motor oil to a gas station or hazmat facility for recycling	55	11.0%
Store it in my garage	28	5.6%
Put it in the trash	15	3.0%
Dump it in the gutter or down the storm sewer	7	1.4%
Dump it down the sink	3	.6%
Other	3	.6%
Don't own a car or truck	22	4.4%
Total	500	100.0%

2019: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	415	83.0%
Take the old motor oil to a gas station or hazmat facility for recycling	42	8.4%
Store it in my garage	9	1.8%
Put it in the trash	5	1.0%
Dump it in the gutter or down the storm sewer	4	.8%
Dump it down the sink	2	.4%
Dump it on the ground	2	.4%
Other	1	.2%
Don't own a car or truck	20	4.0%
Total	500	100.0%

2018: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	412	82.4%
Take the old motor oil to a gas station or hazmat facility for recycling	47	9.4%
Store it in my garage	12	2.4%
Put it in the trash	4	.8%
Dump it in the gutter or down the storm sewer	2	.4%
Dump it down the sink	2	.4%
Other	2	.4%
Don't own a car or truck	19	3.8%
Total	500	100.0%

2017: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	410	82.0%
Take the old motor oil to a gas station or hazmat facility for recycling	57	11.4%
Store it in my garage	10	2.0%
Put it in the trash	6	1.2%
Dump it in the gutter or down the storm sewer	2	.4%
Other	5	1.0%
Don't own a car or truck	10	2.0%
Total	500	100.0%

2016: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	399	79.8%
Take the old motor oil to a gas station or hazmat facility for recycling	65	13.0%
Store it in my garage	9	1.8%
Put it in the trash	8	1.6%
Other	2	0.4%
Don't own a car or truck	17	3.4%
Total	500	100.0%

2015: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	54	10.8%
Store it in my garage	4	0.8%
Put it in the trash	3	0.6%
Don't own a car or truck	13	2.6%
Total	500	100.0%

2014: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	50	10.0%
Put it in the trash	5	1.0%
Store it in my garage	4	0.8%
Other	1	0.2%
Don't own a car or truck	14	2.8%
Total	500	100.0%

2013: When you need to change the oil in your car or truck, what do you do with the old motor oil?

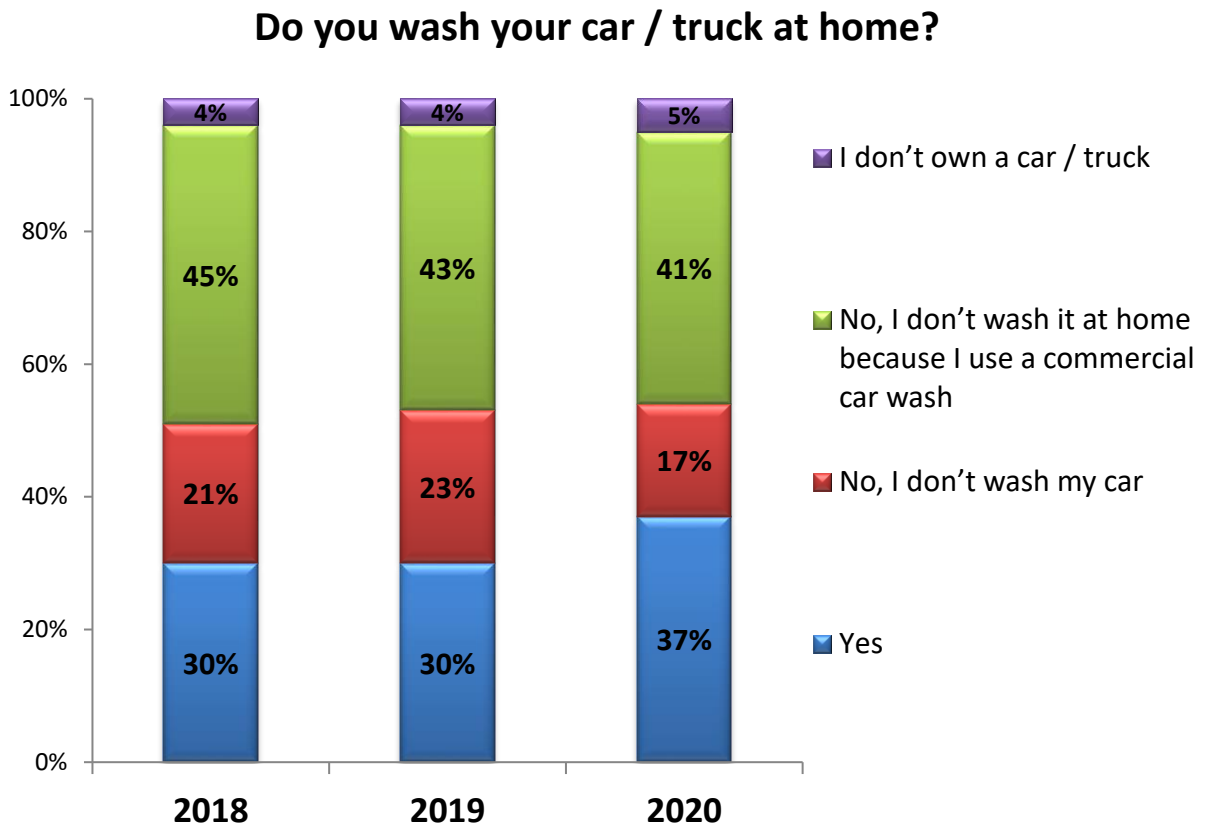
	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	427	85.4%
Take the old motor oil to a gas station or hazmat facility for recycling	57	11.4%
Put it in the trash	3	0.6%
Dump it in the gutter or down the storm sewer	2	0.4%
Store it in my garage	1	0.2%
Don't own a car or truck	10	2.0%
Total	500	100.0%

2012: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	49	9.8%
Store it in my garage	3	0.6%
Put it in the trash	2	0.4%
Other	2	0.4%
Don't own a car or truck	18	3.6%
Total	500	100.0%

2011: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	Frequency	*Percent*
I don't change the oil myself / I take it to a garage / oil change service	413	82.6%
Take the old motor oil to a gas station or hazmat facility for recycling	60	12.0%
Put it in the trash	2	0.4%
Other	2	0.4%
Don't own a car or truck	23	4.6%
Total	500	100.0%



- Slightly more than one-third (37%) in 2020 reported washing their car / truck *at home*. It was slightly more common to use a commercial car wash (41% in 2020). When examining the results by subgroups, those living in their residence for less than four years were less likely than others to wash their car at home, while males and homeowners were more likely. The age group with the highest proportion washing their car at home was age 35 to 44.

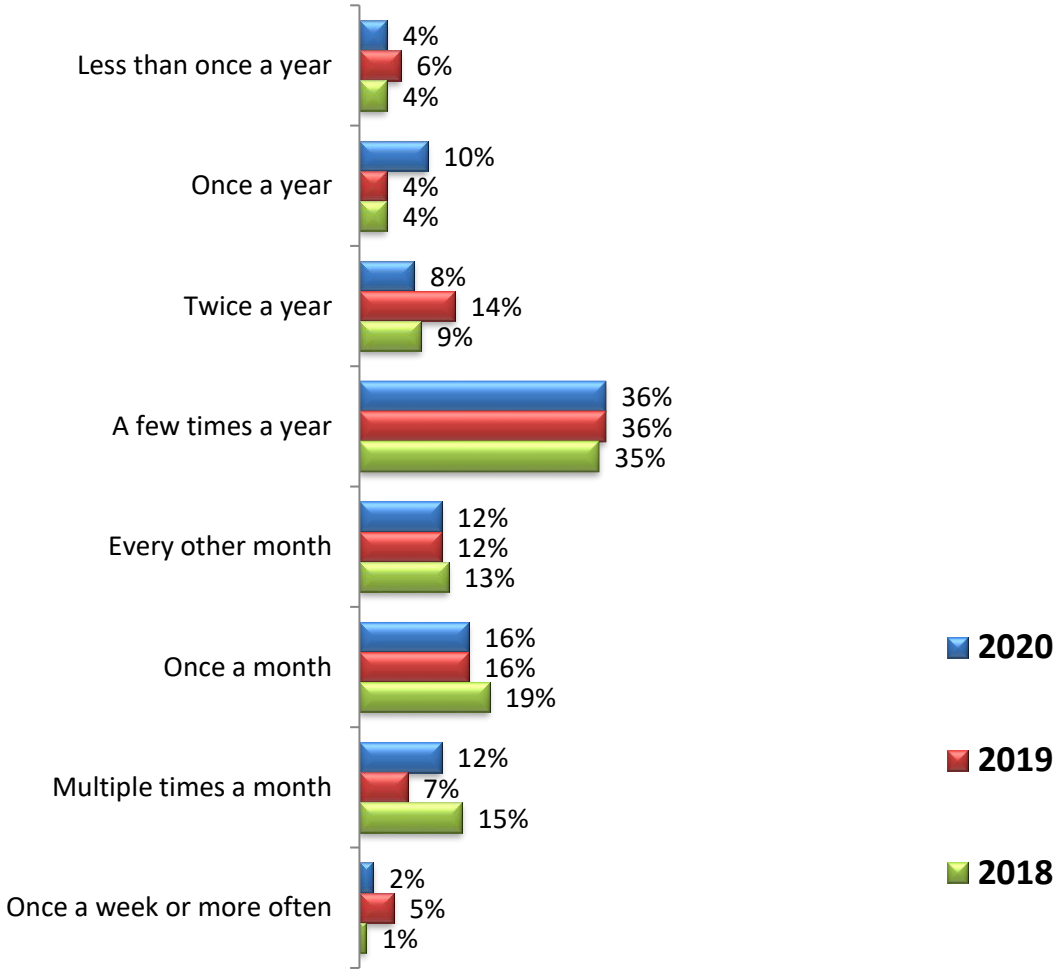
Wash Car / Truck At Home	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	32%	25%	41%	38%	42%
No, don't wash it	17%	17%	17%	17%	18%
No, use car wash	44%	52%	38%	42%	32%
Don't own a car / truck	7%	6%	4%	3%	8%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

Wash Car / Truck At Home	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	24%	41%	44%	42%
No, don't wash it	21%	17%	16%	14%
No, use car wash	47%	39%	35%	41%
Don't own a car / truck	8%	3%	5%	3%
N = number of respondents	*134*	*116*	*103*	*147*

Wash Car / Truck At Home	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	43%	52%	36%	34%	25%
No, don't wash it	12%	22%	20%	16%	17%
No, use car wash	40%	22%	39%	46%	52%
Don't own a car / truck	5%	4%	5%	4%	6%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

Wash Car / Truck At Home	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	47%	27%	43%	17%	44%
No, don't wash it	16%	18%	17%	19%	15%
No, use car wash	34%	48%	38%	50%	34%
Don't own a car / truck	3%	7%	2%	14%	7%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

How often do you wash your car / truck at home?



- Among those who wash their car / truck at home, the most common frequency of doing so was a few times a year (36% in 2020).

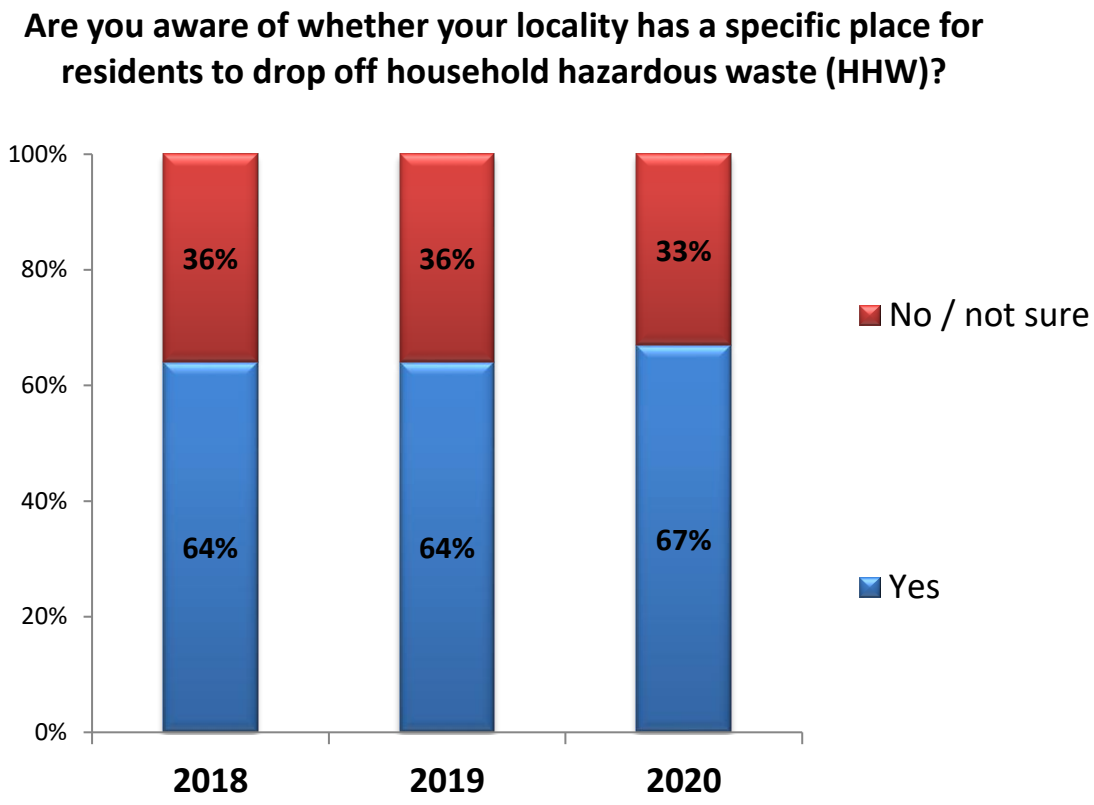
- For a separate question about what applied when washing their car / truck at home, the results are shown below.

    - 49% in 2020 selected "I used environmentally friendly detergent." (40% in 2019)

    - 40% selected "I try to wash on the grass or other surface that absorbs water." (28% in 2019)

    - 10% selected "I don't use any detergent – use water only." (10% in 2019)

    - 17% selected none of the above. (32% in 2019)



- Two-thirds (67%) in 2020 indicated that they were aware of whether their locality has a specific place to drop off household hazardous waste. As shown in the table below, this was true for the majority in each area. However, awareness increased significantly with length of time living in their current residence and for age 55 and older. Also, males and homeowners were more likely than others to be aware, while those of Hispanic heritage were less likely.

HHW Awareness	**Alexandria**	**Arlington**	**Fairfax Inclusive**	**Leesburg / Loudoun**	**Dumfries / Stafford**
Yes	58%	67%	70%	66%	63%
No / not sure	42%	33%	30%	34%	38%
N = number of respondents	*59*	*69*	*256*	*76*	*40*

HHW Awareness	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Yes	48%	64%	78%	80%
No / not sure	52%	36%	22%	20%
N = number of respondents	*134*	*116*	*103*	*147*

HHW Awareness	Age 21 to 34	35 to 44	45 to 54	55 to 64	65 +
Yes	60%	58%	62%	76%	75%
No / not sure	40%	42%	38%	24%	25%
N = number of respondents	*102*	*96*	*76*	*101*	*125*

HHW Awareness	Male	Female	Homeowners	Renters	Hispanic Respondents
Yes	77%	57%	75%	40%	44%
No / not sure	23%	43%	25%	60%	56%
N = number of respondents	*253*	*247*	*388*	*112*	*41*

Appendix: Questionnaire

2020 Only Rain NVRC Survey

INTRODUCTION:
Welcome, and thank you for participating in this important research survey.

S1. Are you:

- Male
- Female

S2. Which of the following categories includes your age?

- Under 18 **[END SURVEY]**
- 18 to 20 **[END SURVEY]**
- 21 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 or older

S3. Which of the following best describes your residence?

- I own my home
- I rent my home
- Neither **[END SURVEY]**

S4. Do you live in the state of Virginia?

- Yes
- No **[END SURVEY]**

S5. Which of the following best describes where you live (county or city or town)?

- o Alexandria
- o Arlington
- o Dumfries
- o Fairfax (city of)
- o Fairfax (county of)
- o Falls Church
- o Herndon
- o Leesburg
- o Loudoun County
- o Stafford County
- o Vienna
- o None of the above **[END SURVEY]**

S6. Which of the following describes your ethnicity? (Please select all that apply)

- ☐ African American / Black
- ☐ American Indian / Alaska Native
- ☐ Asian
- ☐ Hispanic / Latino
- ☐ Native Hawaiian / Pacific Islander
- ☐ White / Caucasian
- ☐ Other: _____

Q1. For how many years have you lived in your current residence?

- o Less than 1 year
- o 1 to 3 years
- o 4 to 9 years
- o 10 to 19 years
- o 20 or more years

Q2. Do you live within the Potomac River Watershed?

- o Yes
- o No
- o Not Sure
- o I do not know what a "watershed" is

Q3. "Storm water" is rain or other water that flows into the street, along the gutter and into the storm drain. To the best of your knowledge, where do you believe storm water eventually ends up?

- □ At a waste water treatment facility
- □ Potomac River or Chesapeake Bay
- □ Don't know
- □ Other:_____

Q4. Do you (or does another person in your household) have a dog?

- o Yes **[CONTINUE WITH Q5]**
- o No **[SKIP TO Q8]**

Q5. When taking your dog(s) for a walk, how often do you pick up after your dog(s)?

- o Always / every time the dog leaves waste
- o Usually
- o Half the time
- o Sometimes
- o Rarely
- o Never
- o Not applicable / I don't take the dog(s) on walks

Q6. How often do you (or does someone else from your household) remove dog waste from your yard?

- o Daily
- o Weekly
- o Monthly
- o Less often than once a month
- o Never
- o Not applicable / don't have a yard

[SKIP OVER Q7 IF NEVER OR NOT APPLICABLE IN BOTH Q5 and Q6]
Q7. What is the most important reason to pick up after your dog(s)? (Please select only one)

- o City / County ordinance
- o Don't want to step in it
- o It causes water pollution
- o It is gross
- o It's what good neighbors do
- o Odor
- o Other reason
- o None / no reason to

Q8. Does your home have a lawn or garden?

- o Yes **[CONTINUE WITH Q9]**
- o No **[SKIP TO Q16]**

Q9. Are you the primary person who takes care of the lawn or garden, or are you familiar with the practices used for your garden or lawn?

- o Yes **[CONTINUE WITH Q10]**
- o No **[SKIP TO Q16]**

Q10. What do you do with grass clippings from your lawn or garden?

- Bag them and put them in the regular trash
- Bag them and put them in compost / recycling bags for pick up
- Leave them on the lawn / garden
- Put them in a compost pile / bin
- Have a lawn care service cut my lawn
- Other
- Not applicable / don't have grass clippings

Q11. After you cut your grass, if grass clippings end up in the street, do you:

- Leave then there
- Sweep them up or blow them back into the lawn
- Sweep or blow them into the storm drain
- Not applicable / don't have grass clippings
- Other: _____

Q12. Which of the following best describes how often you fertilize your lawn?

- Once a year in the spring
- Once a year in the summer
- Once a year in the fall
- Twice a year
- Three times a year
- Four or more times a year
- Never
- I have a lawn care service fertilize my yard
- I only fertilize if a soil test indicates the grass needs fertilizer

Q13. A rain barrel is a barrel you put under your downspout to collect rain water that you can use around your yard. Which of the following best describe your level of familiarity with rain barrels? [Allow multi-select]

- ☐ I have heard of rain barrels
- ☐ I have seen rain barrels in my neighborhood
- ☐ I am interested in getting a rain barrel
- ☐ I have a rain barrel
- ☐ I have never heard of a rain barrel until now.

Q14. A rain garden is a bowl shaped garden area where runoff can collect and soak into the ground. Which of the following best describe your level of familiarity with rain gardens? [Allow multi-select]

- ☐ I have heard of rain gardens
- ☐ I have seen rain gardens in my neighborhood
- ☐ I am interested in installing a rain garden in my yard
- ☐ I have a rain garden
- ☐ I have never heard of a rain garden until now.

Q15. Conservation landscaping is replacing an area of lawn or bare soil in your yard with native plants. Which of the following best describe your level of familiarity with conservation landscaping? [Allow multi-select]

- ☐ I have heard of conservation landscaping
- ☐ I have seen conservation landscaping in my neighborhood
- ☐ I am interested in installing conservation landscaping in my yard
- ☐ I have conservation landscapes in my yard
- ☐ I have never heard of conservation landscaping until now.

Q16. When you need to change the oil in your car or truck, what do you do with the old motor oil?

- o I don't change the oil myself / I take it to a garage / oil change service
- o Take the old motor oil to a gas station or hazmat facility for recycling
- o Store it in my garage
- o Put it in the trash
- o Dump it in the gutter or down the storm sewer
- o Dump it down the sink
- o I dump it on the ground
- o I don't own a car or truck
- o Other: _____

Q17. Are you aware of whether your locality has a specific place for residents to drop off household hazardous waste (HHW)? HHW includes items like automobile fluids, pesticides and herbicides, oil-based paint and paint thinners, etc.

- o Yes
- o No / not sure

Q18. Do you wash your car / truck at home?

- o Yes
- o No, I don't wash my car
- o No, I don't wash it at home because I use a commercial car wash
- o I don't own a car

Q19. [If yes to Q18] How often do you wash your car / truck at home?

- o Less than once a year
- o Once a year
- o Twice a year
- o A few times a year
- o Every other month
- o Once a month
- o Multiple times a month
- o Once a week or more often

Q20. [If yes to Q18] When you wash your car / truck at home, which of the following apply?

- □ I try to wash on the grass or other surface that absorbs water
- □ I use environmentally friendly detergent
- □ I don't use any detergent – use water only
- □ None of the above

Q21. Looking at the pictures below, would you consider this to be a potential source of water pollution?

- Yes
- No
- Not sure

Q22. What is the likelihood that you would call county or town officials to report potential pollution so they could investigate the cause?

- Definitely would
- Probably would
- Might or might not
- Probably not
- Definitely not

Q23. How confident are you that you would know where to report potential water pollution?

- o Very confident
- o Somewhat confident
- o Not very confident
- o Not at all confident

Q24. What TV service provider do you use? [RANDOMIZE]

- o Verizon
- o Comcast
- o Cox
- o Direct TV
- o Dish Network
- o Xfinity
- o Do not have cable TV
- o Do not watch TV
- o Other: _____

Q25. Which of the following channels, if any, do you watch? [RANDOMIZE]

- ☐ HLN TV
- ☐ Oxygen
- ☐ Toon
- ☐ ENT
- ☐ Animal Planet
- ☐ CNN
- ☐ ESPN
- ☐ History
- ☐ National Geographic
- ☐ Home and Garden
- ☐ None of the above

Q26. Thinking about the last 12 months, have you heard about any opportunities to participate in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?

- o Yes
- o No / not sure

Q27. [IF YES IN Q26] Thinking about the last 12 months, have you participated in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?

- o Yes
- o No

Q28. Please watch the video below. Before this survey, had you seen this ad, or a similar one on TV, Facebook, or Twitter about reducing water pollution?

- o Yes **[CONTINUE WITH Q29]**
- o No **[SKIP TO Q30]**
- o Not sure **[SKIP TO Q30]**

Q29. Did seeing the ad(s) about reducing water pollution make you change any of your behaviors related to fertilizing less often and/or reducing water pollution?
(Select all that apply)

- □ Yes, I now pick up pet waste more often
- □ Yes, I now plan to fertilize fewer times during the year
- □ Yes, I now properly dispose of motor oil
- □ I was already doing what is recommend to reduce water pollution
- □ None of the above applies to me

Q30. Have you seen the logo above anywhere? (Show Only Rain logo)

- Yes
- No

Q31. Regardless of whether you have seen that specific ad or logo, have you seen or received information about reducing water pollution from any source in the past 12 months?

- Yes
- No
- Not sure